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# USSR Report

CONSTRUCTION AND EQUIPMENT

No. 55

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## CONSTRUCTION

### USSR GOSPLAN'S ISAYEV ON CONSTRUCTION PRODUCTS FOR 1982

Moscow AGITATOR in Russian No 1, Jan 82 (signed to press 21 Dec 81) pp 12-15

[Article by V. Isayev, first deputy chairman of USSR Gosplan: "The Starting Construction Projects for the Year"]

[Text] Capital construction is one of the decisive parts of the second year and of the 11th Five-Year Plan as a whole. Comrade L. I. Brezhnev emphasized this in his address at the November (1981) Plenum of the CPSU Central Committee. It was noted at the party's central committee plenum that a feature of the draft of the plan for 1982 consists of the fact that it is specified in it that the fixed capital being put into use be substantially increased along with the smallest growth in capital investments. Existing material and labor resources, the capacities of construction organizations and also the amounts of incomplete construction were taken into consideration. There is now a realistic, better balanced plan which creates the necessary conditions for normal work.

The capital investments that are being allocated to the national economy by means of all sources of financing come to 137.4 billion rubles in 1982. It is specified that a maximum concentration of labor, material and financial resources be provided at starting construction projects so that they will be put into operation more quickly.

The communist party is in turn conducting a course first and foremost to develop socialist industry and most of all heavy industry--the foundations of the country's might--to intensify all sectors of public production and to improve the people's well being. The 26th CPSU Congress emphasized the necessity of conducting this course further after having given special attention to the development of the base sectors of industry, most of all fuel and power bases, with which we will begin our journey over the map of the starting construction projects for the year.

In 1982, 8.5 million kilowatts of new power capacities will be put into operation including 2 million at nuclear power stations and more than 1.6 million kilowatts at hydroelectric power stations. Construction of the power network is continuing. More than 35,000 kilometers of electric transmission lines with a current of 35 kilovolts or more will be put into use. Special attention is being given to the

construction of main lines with a current of 500 kilovolts or more including the unique Ekibastuz-Chelyabinsk line (the Ekibastuz-Kokchetav section) with a current of 1150 kilovolts. The start up of the Sayano-Shushenskiy GES-Novokuznetsk (the first network) and the Zeya GES-Khabarovsk have also been specified which will make it possible to improve the power supply for the most important industrial regions of the country and the BAM [Baykal-Amur Main Railroad Line] zones.

The transfer of housing, civil and industrial structures to a heating supply from centralized sources is being systematically carried out.

Petroleum and gas production is continuously growing in the country. In 1982, 614 million tons of "black gold" and condensates and 492 billion cubic meters of gas will be obtained. The Pavlodar-Chimkent and Groznyy-Baku gas pipelines will be laid. The length of the gas pipeline through which Tyumen' gas flows from Urengoy to Petrovsk amounts to almost 1,700 kilometers, and the Urengoy-Nizhnyaya Tura-Petrovsk-Novopskov lines are 2,073 kilometers.

Two catalytic cracking installations are scheduled to be built for the petroleum refining industry in 1982 at the Moscow and Pavlodar petroleum refining plants. This will make it possible to increase the output of motor fuels by several million tons without increasing the amount of petroleum being refined by means of additionally extracting these petroleum products from petroleum residue.

Construction of a complex for aromatic hydrocarbons--raw materials for obtaining synthetic fibers and plasticizers--will be completed at the "Omsknefteorgsintez" Production Association.

Capacities for extracting more than 17 million tons of solid fuel are scheduled to be put into use in the coal industry in 1982. Coal extraction will obtain its greatest growth in the eastern regions of the country--by means of the most advanced and economically efficient open cut method which will make it possible to substantially increase labor productivity and reduce the cost of products compared to the underground method.

Capacities for extracting 17 million tons of iron ore and for producing 7 million tons of iron ore concentrate, 5.3 tons of nodules, 3 tons of steel, 1.2 tons of rolled ferrous metal, and 0.4 tons of steel pipes are specified to be put into operation during the current year. The most important starting projects for the year are the Kostomukshskiy, Lebedin and Mikhaylovsk mining-concentrating combines, an oxydized nodules factory at the Oskol'skiy electrometallurgical combine, an oxygen converting shop at the Dneprovskiy Metallurgical Plant imeni Dzerzhinskiy, and the second phase of an all-purpose girder mill at the Nizhniy-Tagil metallurgical combine. The second phase of a multi-ply pipe shop at the Vyksa metallurgical plant, a coke battery at the Zaporozh'ye Coke and Chemical Plant, a shop for rail splices at the Saldinskiy metallurgical plant, and others will become operational.

In ferrous metallurgy special attention has been given to consolidating the ore base and to the technical reoutfitting, reconstruction and expansion of operating enterprises. The final phase of the Nikolayev alumina plant which is being built with

the participation of a French firm and an electrolysis building at the Tajik aluminum plant will become operational in 1982 and construction of the Sayanskiy aluminum plant will begin. The rate of building a raw materials base for the sector is planned to be substantially increased and also capacities for processing non-ferrous metal scraps and waste are planned to be formed.

In the chemical industry the start up of operations for capacities that will produce mineral fertilizers, mica, plastics, and synthetic fibers and tires in the following production associations is specified by the plan for 1982: the Kemerovo "Azot" and "Angarsknefteorgsintez," the Yavorov "Sera," the Kalush "Khlorvinil," and the Mogilev "Khimvolokno," "Salavatnefteorgsintez" and "Chimkentshina" production associations; the Meleuz and Gubakha chemical plants and the Novosolikamskiy potassium plant.

The paramount role in accelerating technical progress belongs to machine building--the heart of socialist industry.

An increase in the production of metal cutting machine tools has been planned chiefly by means of technically reoutfitting operating enterprises which makes up 85.4 percent of the total amount of increase in the capacities. More productive, precise, dependable and durable metal cutting machine tools and forging and pressing machines are specified to be turned out which will fully meet the growing demands of the sectors of the national economy.

For example, new types of bracket milling machine tools will be mastered at the Gor'kiy Milling Machine Tools Plant, whose productivity is 30 to 70 percent higher than those being turned out at the present time. The precision of the parts that are machined by them is also being increased by 30 percent while the relative consumption of metal is being reduced.

High precision computer programmed drilling-milling-cutting machine tools with compartments for automatically changing a tool which are 3.5 to 4 times as productive as previous ones are scheduled to be turned out at the new production areas at the Odessa Precision Machine Tool Plant imeni the 25th CPSU Congress. This will provide multi-machine tool service and also make it possible to form automated sections that are controlled by EVM [computer].

Critically scarce types of equipment and most of all heavy machines are specified to be turned out at forging and pressing machine building enterprises. For this goal capital investments are being allocated to create capacities at the Ivano-Frankovsk Mechanical Presses Plant, to expand the Voronezh Heavy Mechanical Presses Plant and the Forging and Pressing Equipment Plant imeni Kalinin, the Odessa Automaton-Press Plant and others.

The start up of capacities at enterprises in the Ministry of Chemical and Petroleum Machine Building that are specified by the plan for 1982 will have important significance for the successful construction of industrial projects in the fuel and power complex and for increasing the amount of petroleum and gas extracted during the 11th Five-Year Plan. For example, the Aleksin "Tyazhpromarmatura" plant will

begin to turn out large ball cranes for constructing the Western Siberia-Center and Urengoy-Uzhgorod main gas pipelines. The start up of operations is scheduled for capacities at a specialized complex that turns out boring chisels at the Kuybyshev plant.

Considerable attention is given in the plan for 1982 to the creation of capacities that are intended to increase the output of motor vehicles, tractors and other agricultural machines. For example, several thousand agricultural trailer trucks with diesel engines are scheduled to be turned out in new sections of the Kutaisi Motor Vehicle Plant imeni Sergo Ordzhonikidze. The production of such vehicles is gearing up for the first time.

Capacities at the Belorussian motor vehicle plant, the L'vov and Yerevan production associations where automated loaders are being created, the Krasnoyarsk combine plant, the Chelyabinsk and Khar'kov tractor plants, the Gomel' "Gomsel'mash" Agricultural Machine Building Plant that turns out self-propelled fodder harvesting combines, and the Belebey Experimental Testing Technological Equipment Plant that produces screw pumps with crushers are being substantially expanded.

Capacities that produce various building materials will be substantially increased. They will provide a growth of 2.27 million tons in the output of cement in 1982. A technological line using the dry production method and having a rotary furnace with a capacity of 1.15 million tons of cement per year has to be put into operation at the Krivyy Rog cement plant. The productivity of the Nikolayev (L'vovskaya Oblast) and Savinskiy (Arkhangel'skaya Oblast) cement plants will be increased.

A technological line that is capable of turning out more than a thousand kilometers of pipe per year will become operational at the Sukhoy Log Asbestos Cement Products Combine (Sverdlovskaya Oblast). This will make it possible to more fully satisfy the demands of the national economy for asbestos cement pipes and most of all agricultural construction in the RSFSR Non-Chernozem Zone.

Expansion and reconstruction of the Novoaltaysk and Slavuta (Khmel'nitskaya Oblast) Carton and Ruberoid Plants will make it possible to turn out an additional 170 million square meters of pliant roofing.

Noticeable qualitative changes will take place in the timber, pulp and paper, and wood processing industry in 1982. Builders will put new capacities into operation for exporting 6.7 million cubic meters of wood.

New capacities for processing wood and wood scraps will become operational. Their total productivity is 81,000 tons of wood pulp, 97,000 tons of paper, 165,000 tons of cartons and 185,000 cubic meters of wood chip tiles. The most substantial increase in this product will be achieved at the Amur Wood Pulp Carton Combine and the Syktyvkar Timber Industry Complex.

It should be noted that half of the capacities producing wood pulp and more than a third that produce wood chip tiles are being put into use at operating enterprises by means of reconstructing or technically reoutfitting them.



Enterprises in the Ministry of the Timber, Pulp and Paper, and Wood Processing Industry will increase the output of furniture by 208 million rubles.

In association with the sharply increasing demand by the population in recent years for cotton fabrics and tricot articles the preferential output of these products is specified at factories in light industry that have newly been put into operation. The general trend of capital construction in the USSR Ministry of Light Industry's system during the current five-year plan is the construction of small narrowly specialized factories (branches of cotton industries) in small cities, villages and regional centers. This makes it possible to sharply reduce the length of time for building enterprises and developing capacities and also to attract available labor resources into public production. Twelve such branches have been specified to be built in 1982 in Uzbek SSR. In all, 245,300 fabric spindles and 11,433 fabric looms are scheduled to be put into operation in light industry for the year which will provide an output of about 300 million square meters of cotton fabrics. The construction of new capacities is also specified which are capable of producing 71.5 million pieces of tricot articles, including 17 million at the Kirovakan Tricot Association imeni Kamo in Armenian SSR, 4 million at the Kutaisi Tricot Factory in Georgian SSR and 2 million at the Irkutsk Tricot Factory.

In all light industry will obtain more than 60 new factories which will make it possible to turn out a substantial additional amount of cotton fabrics, clothing and shoes that are in the greatest demand among the population.

The necessity of ensuring a proportional and balanced growth for all sectors of the agroindustrial complex as a unified whole and of organizing their precise interdependence is pointed out in the resolutions of the 26th CPSU Congress. In 1982, 37 billion rubles of capital investments (including kolkhoz funds) are being allocated for the development of agriculture, including 21.1 billion for construction and installation work.

Considering the importance of building up personnel in the village and also of the necessity of improving the social conditions of the lives of agricultural workers an unprecedented growth in capital investments to build housing units and cultural and everyday structures has been stipulated. On the whole the funds for building structures for non-production purposes are being increased by 31 percent versus 1980; the volume of housing construction by 26 percent; municipal construction by a factor of 1.8; children's preschool institutions by 21 percent; and club institutions by 35 percent.

Seven billion five hundred and eighty million rubles are being allocated toward land reclamation including 5.18 billion for construction and installation work. It is projected that 695,100 hectares of irrigated land, 759,000 hectares of drained land and 5,447,200 hectares of irrigated pasture are to be put into use. In addition, an area of about 900,000 hectares of land that is currently being irrigated will be qualitatively improved.

The area of reclaimed land comes to 32.4 million hectares at the end of 1982.

Capital investments amounting to 1.8 billion rubles are being set aside to develop the food industry (the USSR Ministry of the Food Industry's system). Practically the entire growth in production capacities is scheduled to be obtained by means of expansion and reconstruction of operating enterprises.

The start up of capacities that are capable of processing 548 tons of meat and 1,888 tons of milk and of turning out 45.3 tons of rich cheese and 74.6 tons of dry skim milk or substitutes for whole milk per shift has been specified for the meat and milk industry.

The flour mill, groats and mixed feed industry will be further developed. New milling enterprises in the cities of Belgorod and Spassk-Dal'nyy in Primorskoy Kray and also in the Ukrainian SSR, Uzbek SSR and Kazakh SSR will become operational. A number of factories are being equipped with the latest equipment that will make it possible to increase the output of superior quality products and improve the variety of bread and bakery items. New mixed feed enterprises will become operational.

An important goal is to eliminate and reduce the loss of agricultural products including grain as well. Therefore, the construction of grain warehouses is being given much attention in 1982. Large elevators will be built in Voronezhskaya, Volgogradskaya and Saratovskaya oblasts, Krasnodarskiy Kray, Tatar ASSR, the Ukraine, Belorussia and Kazakhstan.

The creation of new potato and vegetable warehouses, enterprises for processing milk, slaughtering cattle and processing meat is also specified.

In the microbiology industry capital investments are mainly being allocated toward the construction of starting projects and the technical reoutfitting and reconstruction of operating enterprises. The start up of capacities is specified which will make it possible to make tens of thousands of tons of feed protein and enrich up to two million tons of mixed feed.

A substantial capital construction program is being carried out in transportation. New railroad lines (419 kilometers) and secondary routes (925 kilometers), shipping complexes in seaports with a capacity of 3.43 million tons of cargo per year and with hawsers having a length of 1,622 linear meters and mechanized hawsers in river ports with a length of 752 meters and a capacity of 1.38 million tons of cargo per year will be numbered among those in operation. Ten new hard surface take off runways will begin to be used and the network of roads for motor vehicles is increasing.

Yet another section in the eastern part of the Baykal-Amur Main Railroad Line--from Ural to Berezovka--whose length is greater than 300 kilometers and a railroad bypass around Ufa junction will become operational in 1982.

A set of measures aimed at developing and improving the system of public health care is planned to be implemented. Capital investments amounting to 1.74 billion rubles from all sources of financing have been specified for these goals. Hospitals with 50,800 beds and dispensary and polyclinic institutions for 81,300 visits per shift will be put into operation. Completion of this plan will make it possible to provide additional medical treatment under hospital conditions for more than one million people and to receive 39 million patients in dispensaries and polyclinics over the course of the year.

Much has to be done by builders to realize the program for further improvement of the welfare of the Soviet people that is outlined for the second year of the current five-year plan. Housing units with a total area of 106.9 million square meters are planned to be built. New water pipes and sewerage, heating and gas networks having a total length of more than 17,000 kilometers will be laid. Almost 600,000 apartments are scheduled to be equipped with electric ranges. Kindergartens and nurseries with 554,000 seats and general education schools with 849,000 seats will be built.

The tasks that have been set for capital construction are difficult yet realistic. As was emphasized at the November (1981) CPSU Central Committee Plenum it is necessary to apply the maximum effort in order to put production capacities into operation at all the projects that are specified in the plan for 1982 without exception.

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## CONSTRUCTION

INTERVIEW WITH BSSR MINISTER OF INSTALLATION, SPECIAL CONSTRUCTION ON AUTOMATION

Minsk ZVYAZDA in Belorussian 6 Oct 81 p 2

[Interview with I. A. Antanovich, BSSR minister of Installation and Special Construction Work, by ZVYAZDA correspondent V. Charnyauski; date and place not specified: "Can Computers Do All This"]

[Text] [Question] At a large construction site, when the question of achievements came up in a conversation with erection crews, one of them said: "Some find, others lose." While stated with a certain bit of irony, these words nevertheless express the essence of the problem and give one food for thought. Indeed, why is it that one person "finds" while another "loses"? Why is it that these essentially opposite concepts are living in "peaceful coexistence"? What should be done to ensure that erection and installation crews more frequently "find" rather than "lose"?

[Answer] I shall begin by answering the first part of the question. It is true that our specialists frequently "find," as you say. They do a good job of "reading" complicated blueprints and quickly put together the most diversified assemblies and structures. But the complexity of today's industrial processes.... With what can we compare them? Well, for example, can you understand radio schematic drawings?

[Question] Frankly, not too well. Like anybody else who owns a TV set or radio: the diagrams contain too many different lines and symbols.

[Answer] You see, the installation diagrams for chemical enterprise equipment, let us say, are no less complicated. But this is no problem whatsoever for Belelektromontazh Trust brigade leader Hero of Socialist Labor I. M. Sakol'chyk, H. P. Novosel'ski from the Belsantekhmontazh-2 Trust, M. S. Trusevich from the Promtekhmontazh Association, and many other specialists. They always do their job accurately and with precision -- be it a small shop or a 160 meter stack, such as at the chemical plant in Gomel'. Incidentally, in the last five-year plan our erection and installation crews worked on more than 1000 construction projects in this republic. Approximately 100 large boiler houses were erected, plus three times as many smaller ones.

[Question] However, Iosif Arkadz'yevich, perhaps one can get lost in these large numbers: each project requires its own approach and suitable design and structural components.



[Answer] It is true that in the past erection and installation would proceed slowly because of this. In order to resolve this problem, the ministry began with sharply reducing the number of different types of boiler houses -- presently we have only 20 different types. We then worked up designs on standard modular units and sections. Now we can quickly order them at factories and immediately employ the enlarged-unit erection and installation technique.

[Question] But surely this method also has its limits....

[Answer] Of course it does. Today industrialization of this branch can provide only 4 percent of labor productivity growth. But it is to increase by 21 percent in this republic during the current five-year plan -- more than in the other construction ministries. Therefore it is essential to work in such directions as concentration of efforts on the most important projects and those which are to be completed in the current year, and to improve worker job skills at all levels -- from the brigade to the ministry board and consolidated erection and installation organizations. All this will make it possible to boost the level of economic management in this branch. And this requires the ability to know how to count well.

[Question] I get it. You have adopted as an "ally"....

[Answer] Precisely -- the computer. For two years now the Promtekhmontazh Association has been calculating movement of work brigades at construction sites. This makes it possible to see future prospects fairly accurately: what resources are available for doing the job, and how should work forces be shifted and maneuvered? In short, everybody -- from the head of the trust to the brigade leader -- can clearly see the work sequence. Work performance results are seen in a new light: in that same Promtekhmontazh there has been a significant improvement in organization of labor and engineer work preparatory to construction in the work brigades, and on the whole the association is today among the ministry's leaders. When our erection and installation crews began working at the Molodechno Powder Materials Plant, we conducted the entire preliminary operations process according to the new system, and sent our best work crews to the site -- the brigades of A. R. Rayetski and Ye. F. Bazhko. The erection and installation plan specified the entire installation of ventilation systems unit by unit at assembly stations -- a unique conveyer -- beginning at point zero, as they say. Then the large unit would be raised into place, and secured. With this arrangement the erection and installation crews are naturally working "happier," with high labor productivity.

[Question] Thanks to all these measures, Iosif Arkadz'yevich, your ministry's erection and installation crews were supposed to achieve an excellent work performance. Unfortunately there have not yet been any reports to the effect that work is running ahead of construction schedules at the Molodechno site. Rather the contrary.

[Answer] One can use computers to calculate how erection and installation crews should work with the greatest performance efficiency. Unfortunately, however, there is no computer which can tell us the attitude with which the general contractor and other subcontractors will be working or the attitude toward the construction project by the enterprises supplying equipment and structures. Therefore I should like to discuss the question raised at the beginning of this interview.

The construction conveyer consists today of at least four elements: client, designer, contractor, and supplier. And a single link in this chain, no matter how strong, is unable to get a construction job completed if delays and interruptions occur in the other links. What happened at the powder materials plant at the very beginning of the project? It is being built of advanced, lightweight metal structures. But for a long period of time it was not possible to erect them: the general contractor -- Trust No 23 of the BSSR Ministry of Industrial Construction -- was unable to put down the footings for the columns and posts. In addition, the general contractor does not pay much attention to construction regulations, which require that temporary roads be built prior to beginning construction. Just try to haul loads of beams and columns across the rough ground of a construction site. And then in the tough conditions of a construction site refit and adjust bolted and welded connections between structural members in order to bring them up to grade. Nor did the suppliers at the Molodechno Lightweight Metal Structures Plant show a better attitude toward the needs of the construction job -- they would deliver behind schedule and fail to deliver all the needed items. As a result, our construction process failed to flow smoothly.

[Question] How can such situations be corrected?

[Answer] First of all, each participant in a construction process should work with the highest sense of responsibility for the fate of the project, strengthen mutual relations with the other subcontractors, and adopt the principles of "Work Relay." But all this will remain nothing but good intentions if it is not bolstered by economic responsibility. For example, our ministry is presently doing a good job of meeting its own targets, but is failing to meet targets on construction jobs of the BSSR Ministry of Industrial Construction. Of course the erection and installation crews must bear blame for this. But also to blame in large measure is the general contractor, which is unable to provide an adequately high state of construction readiness at the construction sites. And fines are levied -- as is dictated by the terms of the Belorussian experiment. Last year we paid 129,000 rubles in penalties to the Ministry of Industrial Construction, while they took almost 10 times as much from the construction people. I must say that such a measure provides good incentive.

[Question] Iosif Arkadz'yevich, of course such forms of organization of labor as the brigade contract and cost accountability promote economical management and focus efforts on achieving optimal end results. But many of those involved in the construction process are not operating under identical conditions.

[Answer] Attention should be directed toward this as well, for there has been a great deal of talk, but things are moving slowly at present. Why is it, for example, that construction workers or installation crews, when they fail to meet deadlines specified by contractual obligations, sustain considerable financial loss, while clients and suppliers do not? Take that same Molodechno Metal Structures Plant. Although it caused the erection and installation crews to fall behind schedule, it will achieve its overall plan target and receive profit and bonuses. While our brigades, while displaying fine examples of fast erection and installation, stand idle due to a lack of structural materials and are forced to pay fines through the fault of others. It is high time to make everybody's performance remuneration

dependent on how they achieve targets for completion and movement on-stream of new production facilities.

[Question] It happens that certain enterprises which work for the construction industry operate according to the principle of "plan for the sake of plan." But they leave it to the construction workers to struggle for the end result. Is this not indicated by instances where supplier plants, considering the particularly tight schedule at the construction site, push off a considerable part of their work onto the shoulders of the erection and installation crews? It is as if they are saying, you have nothing else to do, so do this for us....

[Answer] That is precisely what happens. For example, boiler factories deliver boilers and associated equipment to construction sites, but in what condition! Disassembled, in bulk. The same applies to bathroom fixtures and flow control fittings -- valves, flanges, etc. All this arrives at construction sites in a condition which requires working over and bringing up to specifications. There is no need to describe the conditions in which this work is done by installation crews -- in windy and dusty conditions, in the winter cold. In the final analysis valuable time is lost and labor productivity declines.

[Question] To summarize this interview, we can state that the solution to many problems pertaining to improving construction activities lies in strengthening cooperation and coordination among participants in the construction process and supplier ministries, as well as increasing the financial responsibility of all for overall job performance results. But Iosif Arkadz'yevich, are the erection and installation people themselves utilizing all reserve potential?

[Answer] Unquestionably, in addition to leading work forces, we have lagging labor forces the level of economic management of which is below their capabilities. We have carefully calculated these capabilities. Recently, for example, the Belelektromontazh Trust has begun performing more poorly -- they do not do a very precise job of taking into consideration today's specific engineering requirements. It is necessary to "boost" to today's level certain subdivisions of the Belsantekhmontazh-1 Trust, and our Gomel' erection and installation crews need help, as they have proven unprepared for a sharp increase in work volume at Gomsel'mash construction sites. I have already spoken about how this is being done at the ministry. The main thing is that the ways have been pointed out for our work forces to achieve better performance, and certain work is being done. I should merely like to stress once again that the important thing today is not so much the success of individual brigades and administrations as a strengthening of the performance of the entire construction-process conveyer.

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## CONSTRUCTION

### CHAIRMAN BELORUSSIAN SSR GOSSTROY ON CONSTRUCTION PRICES

Minsk SOVETSKAYA BELORUSSIYA in Russian 16 Jan 82 p 2

/Interview with V. G. Yevtukh, chairman of the Belorussian SSR State Committee for Construction Affairs, by P. Burak: "On the Eve of a New Experiment"; date and place not specified/

/Text/ /Question/ Vladimir Gavrilovich, I would like to begin this talk with a topic, which in two words I would call economic foresight, not forecast. Economic forecast is a whole science. But foresight, which is associated with it, is a special feeling for tomorrow's turns in the economy, both desirable and undesirable, and today's search for measures, which would make it possible, for example, to correct the future, enable desirable phenomena to develop more and prevent or at least inhibit undesirable phenomena. In my opinion, the famous Belorussian experiment was a clear and significant example of such an economic foresight based on the knowledge of production, in our case building production. The phrase "Belorussian experiment in construction" customary in the last few years belongs to the past five-year plan and only to it, because during this five-year plan it has ceased to be an experiment and has become a set of management rules for builders in the entire country, rules recorded in the provisions of the well-known decree of the CPSU Central Committee and the USSR Council of Ministers on improving the economic mechanism. Now the question to you: What is next?

/Answer/ During this five-year plan the experiment will be further developed in one of the problem directions.

/Question/ In which one?

/Answer/ To give a brief answer, it will be as follows: We have proposed the introduction of stable prices per unit of capacity of final building output.

/Question/ This sounds complicated to a person not used to subtleties.

/Answer/ Let us look into this. Let us begin from a short past history. A program for a rise in the technical level and labor productivity in construction was developed in the republic 1½ years ago. The realization of this set of measures approved by the Central Committee of the Communist Party of Belorussia and the Belorussian SSR Council of Ministers during this five-year plan will make it possible to significantly raise labor productivity in the sector and to lower labor expenditures by 6 million man-days. The attainment of such a goal is equivalent to the disengagement of 26,000 workers. The material intensiveness and cost of construction will be lowered significantly.



Developing this program, we pondered over how to interest builders and planners in lowering material, labor and financial expenditures and how to utilize economic levers during the solution of these problems.

/Question/ Did the Belorussian experiment not solve all the problems?

/Answer/ The experiment was a remarkable forward step and intensified the role of economic methods in work. This had a positive effect on an increase in the efficiency of public production as a result of the shortening of construction periods. During the past five-year plan the Belorussian SSR Ministry of Industrial Construction shortened the time of project construction by 13 percent.

Having taken a forward, even if significant, step, nevertheless we must not stop and grow weak. We can hopelessly fall behind, especially as the situation in construction is still far from ideal. For example, the expenditure of metal, cement and other material resources per unit of finished building output is still lowered slowly and in many cases loses in comparison with the best world indicators.

/Question/ What is the reason?

/Answer/ The lack of proper financial interest on the part of the main participants in the building conveyer, beginning with planners, in lowering material and labor intensiveness is "to blame" for this.

Along with the commissioning of projects, the volume of commodity building output now serves as the basic evaluation indicator of work. This indicator reflects not so much the ability of a given project to meet some needs of society (for housing, schools and production capacities) as the material and labor intensiveness of construction determined by planning solutions. The work of contracting organizations is planned and evaluated in such a way that the higher the cost of commodity building output in each project, the more advantageous this is to them. Builders are interested in the maximum price of their output and in the use of more and costlier materials. Therefore, often they reluctantly coordinate efficient planning solutions aimed at lowering the cost of buildings under construction and reducing the expenditure of resources.

/Question/ But, Vladimir Gavrilovich, it is possible to cite tens of hundreds of examples when builders rationalize planning solutions, lowering the cost of new construction projects.

/Answer/ They do this after a plan is accepted by a contracting organization. In this case a reduction in the expenditures of resources on the construction of a project is not accompanied by a decrease in the volume of commodity building output and leads to an improvement in the results of activity of contractors.

To expect only an improvement in finished projects means to approach the problem in a too one-sided manner. Economic levers stimulating the use of the most advantageous solutions should operate not only at the stage of construction, but mainly at the stage of planning. Today this does not happen. I expect the question: Why?

As a rule, in order to use the latest achievements of science, technology and advanced experience in a plan, increased expenditures of labor by planning engineers are needed. At the same time, the report volume of planned output is reduced. It depends on the cost of construction and installation work established in drawings and estimates. If an engineer lowers the cost of a plan, the indicators of a planning organization--labor productivity, wage fund and profit--will be lowered. In this situation it is more advantageous to plan projects in resource intensive variants, more expensively. Such a procedure must be changed.

/Question/ How?

/Answer/ The solution did not come right away. We turned to the valuable experience accumulated in the German Democratic Republic. In the accountability report at the 26th CPSU Congress Comrade L. I. Brezhnev pointed out the need for a study and wide introduction of this experience. In order to become familiar with it more closely, a group of managers from the Belorussian SSR went to the GDR.

I would say that our German friends attained a unidirectional economic interest on the part of planners and builders in the development and realization of plans ensuring a reduction in the expenditure of resources. It is based on stable consolidated prices of building output, which are in effect regardless of whether the latest achievements are or are not used in plans and reflect the use value of projects.

/Question/ Vladimir Gavrilovich, an explanation is needed here. A contracting organization is building a house. How does a client settle the accounts with it?

/Answer/ At prices per square meter of living space. Their amount depends on the number of stories. These prices consist of the basic part and surcharges or discounts. The basic part of such a price envisages a single level of equipment of apartments. Surcharges or discounts reflect, for example, the existence of loggias and balconies, the type of heating and other features of the built houses.

/Question/ And if an organization builds projects for production purposes?

/Answer/ Prices per unit of volume, area or length are established for them. Surcharges determined by the territorial placement of projects, characteristics of the construction site and other specific conditions of contractors' work are also applied to them. Consolidated prices are in effect for no less than 5 years. That is why they are called stable.

/Question/ Now let us go back to planners.

/Answer/ The more economical a plan, the fewer labor and material resources are used at a construction site and the lower the cost of projects. The savings attained as a result of the use of the achievements of science, technology and advanced experience in plans and subsequent introduction do not bring about a reduction in the price of building output and become the source of additional profit. They are used for incentives for collectives and are partially entered in the state budget.

For the savings ensured by the plan planners receive from contractors a certain part of this additional profit. It is paid in the form of so-called variable part of the earnings immediately after the financing of a construction project is opened. It comprises up to 50 percent of a planner's annual salary. Part of the saved capital is assigned for bonuses for building production workers.

Such an economic incentive system leads to a significant decrease in the expenditures of labor and materials. In the GDR the 1981-1985 plan envisages ensuring more than one-half of the increment in building output without an increase in material allocations.

/Question/ To what extent will the experience of GDR builders be used in our country?

/Answer/ We believe that it is advisable to conduct an experiment based on the main elements of this experiment. We made a suggestion. On the instruction of the USSR Council of Ministers the USSR State Committee for Construction Affairs with the participation of the interested organizations examined this suggestion and gave its consent to the preparation of such an experiment in Belorussia. The task is clear, that is, under our production conditions to test the efficiency of the set of measures for an increase in the effectiveness of economic incentives for planning and contracting organizations.

The application of consolidated stable prices of building output differentiated depending on the "grades" of buildings and installations is proposed. When more economical planning solutions are used, they, like the volume of commodity building output, will not change. A reduction in the expenditure of resources will not bring about a decline in the indicators of the work of planners and builders as is the case now. Savings will be assigned for incentives for those who attained them, as well as for compensation for the increased expenditures on the introduction of the most advanced solutions.

/Question/ This experiment is not easy...

/Answer/ We visualize the difficulties connected with its implementation. What does it cost to create a wide list of consolidated stable prices! It should be taken into consideration that estimated rates in construction will have to be changed. Nevertheless, for a limited range of projects the experiment can begin as early as 1982.

We are prepared to make every effort to conduct the experiment. It deserves this, because it will contribute to the transfer of building production to the primarily intensive path of development as the decisions of the 26th CPSU Congress require.

From the editorial board: The problems raised by V. G. Yevtukh, chairman of the Belorussian SSR State Committee for Construction Affairs, in connection with a reduction of material, labor and financial expenditures in construction are of paramount importance in an increase in the effectiveness of capital investments. Therefore, the envisaged new economic experiment in construction should become an important stage in the solution of this problem.

In connection with this the editorial board invites the managers and specialists of construction ministries and departments, of planning and contracting organizations and of customer services, foremen, work superintendents, brigade leaders and workers--all those involved in construction--to take part in the discussion of and search for ways of solving these problems.

11,439

CSO: 1821/070



## CONSTRUCTION

### GOSPLAN OFFICIAL INTERVIEWED ON 1982 START-UP CONSTRUCTION PROJECTS

Moscow NEDELYA in Russian No 1, Jan 81 (signed to press 7 Jan 81) pp 4-5

[Interview with USSR Gosplan First Deputy Chairman V. Isayev by A. Yevseyev and V. Tolpygin; date and place not specified]

[Text] [Question] As we have agreed, Vasilii Yakovlevich, this interview will be discussing the year's most important construction projects and the primary directions of our construction efforts. But the first question we should like to ask is not about how or what we will build, but about how and what we are renovating.... Incidentally, is "renovation" also part of the "construction" concept?

[Answer] Renovation is, as a rule, always connected with some construction work, be it laying out a shop in a new way, installing or strengthening foundations, or perhaps adding another floor. In a word, builders are invariably the implementers of that work. But there is a term I think combines both "renovation" and "construction." It is "creation of new capacities." In fact, when you build a new shop, it is to increase the release of some output, which means production capacities also increase. The same applies when an old production facility is renovated -- the foremost task is to ensure an increment in capacity.

[Question] All right, let's move on to the "essential" questions. How can we explain the fact that renovating and retooling existing enterprises is not simply one direction of our capital construction, but the most important, top-priority direction?

[Answer] As is known, the resolutions of the 25th CPSU Congress pointed out the necessity of directing material and financial resources foremost into the retooling and renovation of existing enterprises, that is, where production capacities can be increased without new construction or with the least specific capital investment. The years since have confirmed the fundamental correctness and effectiveness of this direction of fixed production assets reproduction. Analysis of the work indicators of a large group of enterprises testifies to the fact that renovation expenditures are recompensed considerably faster than expenses on new construction and that the level of return on capital is higher and time involved in construction substantially lower.

In renovating and retooling existing enterprises, we first of all update fixed assets, that is, raise equipment and technological processes to a higher technical level, and that is especially important if consideration is given to the fact that obsolete and obsolescent equipment and machinery which retards labor productivity growth is still being used at many enterprises.

Finally, given the limited labor resources in the country, and especially in its eastern regions, the following circumstance is also of considerable importance: in the course of renovation and retooling, the increment in output and improved output quality generally need not be accompanied by an increase in the number of workers.

Production intensification through renovation and retooling of existing enterprises is being continued on an even broader scale in the 11th Five-Year Plan. The proportion of expenditures for these purposes has reached nearly a third of all capital investment in production construction.

[Question] Can it be said in this instance that the accent on renovation is one feature of the capital construction plan in this five-year period?

[Answer] Precisely so. Renovation and retooling are one of the most important demands of changing over to intensive methods of management, to the path of increased capital investment effectiveness. And these tasks, as is known, are among the most important in the country's economic and social development plan for the current five-year plan.

[Question] Could you cite the most important renovation projects in machinebuilding, let's say?

[Answer] The most important? I think there are hardly any enterprises which could not do some sort of renovation, modernize equipment or improve production technology. In machine tool manufacture, for instance, 85 percent of the increment in capacities will be obtained by renovating existing production facilities. The branch will ensure the release of more productive, more accurate, more reliable machine tools and presses which meet modern machinebuilding demands. The release of preset-control machine tools and machines with automatic tool-changing magazines, which are 1.5- to two-fold more productive than ordinary machine tools, will be increased sharply. The production of manipulators and robots will be increased 1.5-fold. The picture is similar at enterprises of other machinebuilding ministries: thanks to the introduction of new capacities, the Kutaisi Automotive Plant will begin large-scale production of powerful truck trailers for rural areas and BelAZ will be producing powerful 75-ton and larger dump trucks. As a result of production retooling, Krasnoyarsk Combine Plant will be providing rural areas with the new SKD-6 combine for use under the harsh conditions of Siberia and "Gomsel'mash" will begin producing new fodder-harvesting combines. Builders and fitters at Klimovskiy Agricultural Machinery Plant are faced with much renovation work. This plant will begin the large-scale release of small motorized mowers which, as is known, are urgently needed in our rural areas now. And in closing about production modernization, let me say that in the Ministry of Food Industry, practically the entire increment in production capacities is to be achieved just by expanding and renovating existing production facilities. In particular, we anticipate that seven sugar refineries will be able to process an additional 10,600 quintals of sugar beets per day thanks to modernization.

[Question] But what about unfinished construction? What amount have builders carried over to the new year? As we understand it, this problem continues to be quite pressing.

[Answer] This is how things stand: in 1980, we succeeded in stopping the growth in unfinished construction and achieved a relative reduction. At the start of 1982, the

amount was 84 percent of the total increase in annual capital investment, still quite a bit, but less than previously (say in 1979, when this figure was 91 percent). According to preliminary calculations, a further reduction in the amount of unfinished construction will be ensured in 1982. The task is to bring this indicator down to the normative level in 1983.

[Question] What figure is that normative?

[Answer] Seventy-two percent and, as you are aware, the reference is to an indicator reflecting the state of affairs in the entire construction work front for the country as a whole, to an "average figure," because this indicator is 38 percent in housing construction, since houses are put up considerably faster than production projects, as considerably less equipment is required. But we also have branches such as power engineering, in which the unfinished construction normative reaches 121 percent. But on average, it is the figure I cited.

[Question] Who and which collectives could be cited as examples of precise, smooth construction organization? Whom could you point to and say: learn from them how to carry out the plan?

[Answer] It's easy for me to answer that question, as those collectives were named in a speech by Comrade L. I. Brezhnev at the November (1981) CPSU Central Committee Plenum: "Glavsapstroy" of Leningrad, builders and fitters at Novolipetskiy Metallurgical Plant, nonferrous metallurgy enterprise builders in the Ukraine and light industry builders in Belorussia. Builders in Uzbekistan, Georgia and Krasnoyarskiy Krai are also working confidently. Unfortunately, by no means all builders are working this way.

[Question] Whom do you have in mind?

[Answer] First of all, builders of the leading ministries: USSR Ministry of Construction of Heavy Industry Enterprises, USSR Ministry of Industrial Construction and USSR Ministry of Construction. In practice, their work has failed to meet construction schedules and has consequently meant delay in putting new capacities into operation. Such large republic organizations as the Ukrainian Ministry of Construction of Heavy Industry Enterprises and Ministry of Industrial Construction, Kazakh Ministry of Construction of Heavy Industry Enterprises and construction organizations of Lithuania, Latvia, Permskaya, Tul'skaya, Chelyabinskaya, Sverdlovskaya and a number of other oblasts of the RSFSR have also permitted failures to meet schedules for starting up capacities.

[Question] What do you see as the reason for these violations?

[Answer] There are several. I'll name several: inadequate level of construction organization, poor use of production capacities and, as a consequence, failure to carry out planned labor productivity growth assignments.

[Question] To finish this topic of "unfinishes," one last question: it's known that some construction projects whose installation was planned for this five-year period have now been temporarily shut down. What is the purpose of this step?

[Answer] The reference is to building large administrative buildings, expensive entertainment and sports facilities such as palaces of culture, sports palaces, and also a number of industrial projects having low construction readiness. The purpose is to avoid scattering funds, to concentrate them instead on the top-priority, most important start-up projects and capacities.

[Question] Inasmuch as you have brought up the year's start-up construction projects, permit me to ask several questions about them. First, what is the planned amount of 1982 capital investment?

[Answer] This year's plan anticipates utilizing 137.4 billion rubles in capital investment.

[Question] An enormous figure, and to someone used to dealing with small sums, it sounds like some kind of abstraction.... How do you deal with the idea of all these billions?

[Answer] This is one way: during the first 50 years of Soviet power, we utilized 747 billion rubles (in comparable prices) of capital investment. The plan for the 11th Five-Year Plan is 700 billion rubles. You can draw your own conclusions: this year, we are faced with doing as much work as we previously did over almost 50 years. Does that clear up those billions?

[Question] Absolutely. And what's behind that figure of 137.4 billion rubles? Which are the most important projects which must be released by builders this year? Begin with the most "expensive."

[Answer] First of all, construction projects of the fuel-energy complex, gas and petroleum pipelines, nuclear power plants, petrochemical giants in Tobol'sk and Tomsk, new supercold electric power transmission lines and, of course, continued construction of the BAM.

[Question] It is obviously no accident that construction of the most "expensive" projects is connected with power engineering.

[Answer] True, energy is more expensive for us with each passing year. The primary sources of energy raw material and resources have shifted to the east and the cost of utilizing them is correspondingly higher: it is one thing to extract petroleum in Azerbaijan or Tataria and quite another to get it out of the swamps of the Tyumen' North. Expenditures of labor and all resources are immeasurably higher.

[Question] What could you tell us about the 1982 plans of builders of the fuel-energy complex?

[Answer] These projects are being built at outstripping rates, as it is only on this condition that the country will be ensured an uninterrupted supply of petroleum, gas, coal and electricity. Fuel exports to the fraternal countries must also be uninterrupted. The accent in the construction program is on increasing gas production. The amount of work to be done can be judged by the fact that 132 billion rubles, 1.5-fold more than in the preceding five-year period, will be directed into developing branches of the fuel-energy complex this five-year plan. And concerning this year's plan, it looks like this: we are faced with drilling, setting up and putting into



operation more than 8,700 oil wells and putting into operation capacities which will ensure a 13.9-million ton increment in coal mining (including an 11.8-million ton increment in open-pit mining). An especially large amount of work awaits gas pipeline builders. In the first half of 1982 the 3,237-km Urengoy-Petrovsk gas pipeline and 27 compressor stations will be put into operation. We are faced with completing construction of a 2,000-km sector of the Urengoy-Petrovsk-Novoposkov gas pipeline. Start-up of this gas pipeline (scheduled for 1983) will permit reducing imports of power coals from Siberia to the country's Center. We will begin building the unique Urengoy-Uzlgorod 4,650-km gas pipeline. It will be finished in 1984.

Electric power plant capacities will increase by more than 12 million kilowatts (including capacities carried over from 1981). The greatest increment will be provided by nuclear power plants (six million kilowatts) and hydroelectric power plants (upwards of 1.6 million kilowatts). We will continue building power networks. Particular attention will be paid to installing mainline and rural electric power transmission lines. The new electric routes will help improve energy supplies to the most important regions of the country and the BAM zone.

I must not fail to mention that all our industry, construction workers and each Soviet person has been set the task of doing everything possible to save electricity and fuel in the five-year plan. Calculations show that we can and must save at least 40 million tons of conventional fuel annually. Why? One reason only: a thrifty attitude towards our energy wealth and an understanding of the importance and necessity of this cause.

[Question] It is known that the weather did not please farmers in the first year of the 11th Five-Year Plan. But unfavorable weather is after all a phenomenon of our climate and usual for agriculture. In this connection, the question: what practical conclusion have rural builders drawn from the 1981 results?

[Answer] This past year did in fact turn out to be exceptionally difficult for agriculture in many regions of the country. The long drought damaged sowings over an enormous area. We need to do everything we can to protect our agriculture as fast and well as possible from the impact and caprices of unfavorable weather. This task has been set us by the party and by the CPSU Central Committee General Secretary, Comrade L. I. Brezhnev. What does the 1982 capital investment plan anticipate in this connection? The reference is foremost to expanding reclamation work. The country now has a total reclaimed land area of approximately 30 million hectares. By the end of the five-year plan, it will have increased by 6.5 million hectares, a perceptible "addition," as you can see! In order to increase the effectiveness of this work, considerable funds are being directed into sovkhos construction on reclaimed land. The construction of closed irrigation systems designed for watering agricultural crops using wide-span sprinklers will be expanded. They will be built on 438,000 hectares. Let me also note that such major reclamation construction projects as the third line of Bol'shoy Stavropol'skiy Canal, the southwestern tract of Golodnaya Steppe, the first line of Yavkinskaya Irrigation System in Nikolayevskaya Oblast and a number of others will also be completed.

[Question] And what about rural housing construction?

[Answer] Significant growth in capital investment on the construction of rural housing and other cultural and personal-services projects is anticipated. The volume of

housing construction is to be increased 26 percent as compared with 1980, and the volume of municipal-services construction -- two-fold. Beginning in 1982, housing on kolkhozes and sovkhoses will be built only with outbuildings.

[Question] Will we continue to build large poultry farms and stockraising complexes?

[Answer] Yes, of course, and no one doubts the appropriateness of this. Complexes for fattening 54,000 hogs will be put into operation in Yaroslavskaya, Kurskaya and Amurskaya oblasts and a stockraising complex for 10,000 head of cattle will be put into operation in Sverdlovskaya Oblast.

[Question] What is the builders' 1982 "Siberian program"?

[Answer] As usual, it is broad and taut. Siberia's contribution to the country's fuel-energy balance is increasing. Shaping the Kansk-Achinsk and Sayansk territorial production complexes will be continued. Krasnoyarsk Heavy Excavators Plant will produce its first output; it is called on first of all to meet the mining equipment requirements of open-pit coal mines in Krasnoyarskiy Kray. The end of construction of Sayano-Shushenskaya GES is at hand. We are continuing construction of electrical engineering enterprises in Minusinsk.

[Question] What about the BAM?

[Answer] The main work here today is on the Central and Western sectors. We are building the railroad line, putting up bridges and drilling tunnels. There are many difficulties, of course, but they are being successfully overcome. Enterprises in the BAM zone are beginning to operate -- this year, Neryunginskiy Open-Pit Coal Mine will provide the country with 2.5 million tons of coking coal. In 1985, train traffic will be opened on the entire 3,100-km mainline.

[Question] Has the sharply increasing demand for cotton fabric and knitwear found reflection in the plans for renovating and building light industry enterprises?

[Answer] Unquestionably. Preferential development of those very branches of light industry is anticipated. The renovation of many existing enterprises will be accelerated and, at the same time, we plan to build small, narrowly-specialized factories (essentially branches of existing enterprises) in small cities, settlements and rayon centers. Why? Such construction sharply reduces the time involved in starting up enterprises. Moreover, we gain an opportunity to involve free labor resources in social production. This year, a total of 245,000 spinning spindles and 11,433 weaving looms will begin working, providing the country with an additional 300 million square meters of cotton fabric. The release of knitwear will also increase, and significantly so.

[Question] What construction projects will be closely monitored by you?

[Answer] Of course, all construction projects require constant attention, but projects scheduled for start-up this year will be monitored constantly. In fact, it is precisely here that we need a maximum concentration of both material-technical resources and people's efforts.

[Question] How do you evaluate the 1982 plan assignments as a whole?

[Answer] Taut. Difficult. But entirely feasible.... The plan has been approved. It has become a law of our life. As Comrade L. I. Brezhnev said at the November (1981) CPSU Central Committee Plenum, "...and it is precisely as to a law, as to a most important party and state document, that everyone, from worker to minister, is obligated to relate to the plan."

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CSO: 1821/061

## CONSTRUCTION

### KAZAKH CONSTRUCTION FOR 1982 REVIEWED

Alma Ata KAZAKHSTANSKAYA PRAVDA in Russian 3 Jan 82 p 1

[Article: "Kazakhstan in Construction"]

[Text] Kazakhstan is an enormous construction site. There is not a corner in our republic where constructive work is not being performed. The Kazakh SSR occupies one of the first places in the union for the growth rates of its capital construction. Thus, during the 9th Five-Year Plan, construction workers utilized 28 billion rubles. During the 10th capital investments came to 33.4 billion rubles. These enormous resources have been expended for a further development of the economy and for a rise in the material and cultural levels of the workers. Even more majestic is the program of constructive work which was mapped out by the 26th CPSU Congress for the 11th Five-Year Plan. According to the economic development plan, 35.5 billion rubles are slated to be assigned for these purposes--2.1 billion rubles more than during the 10th Five-Year Plan.

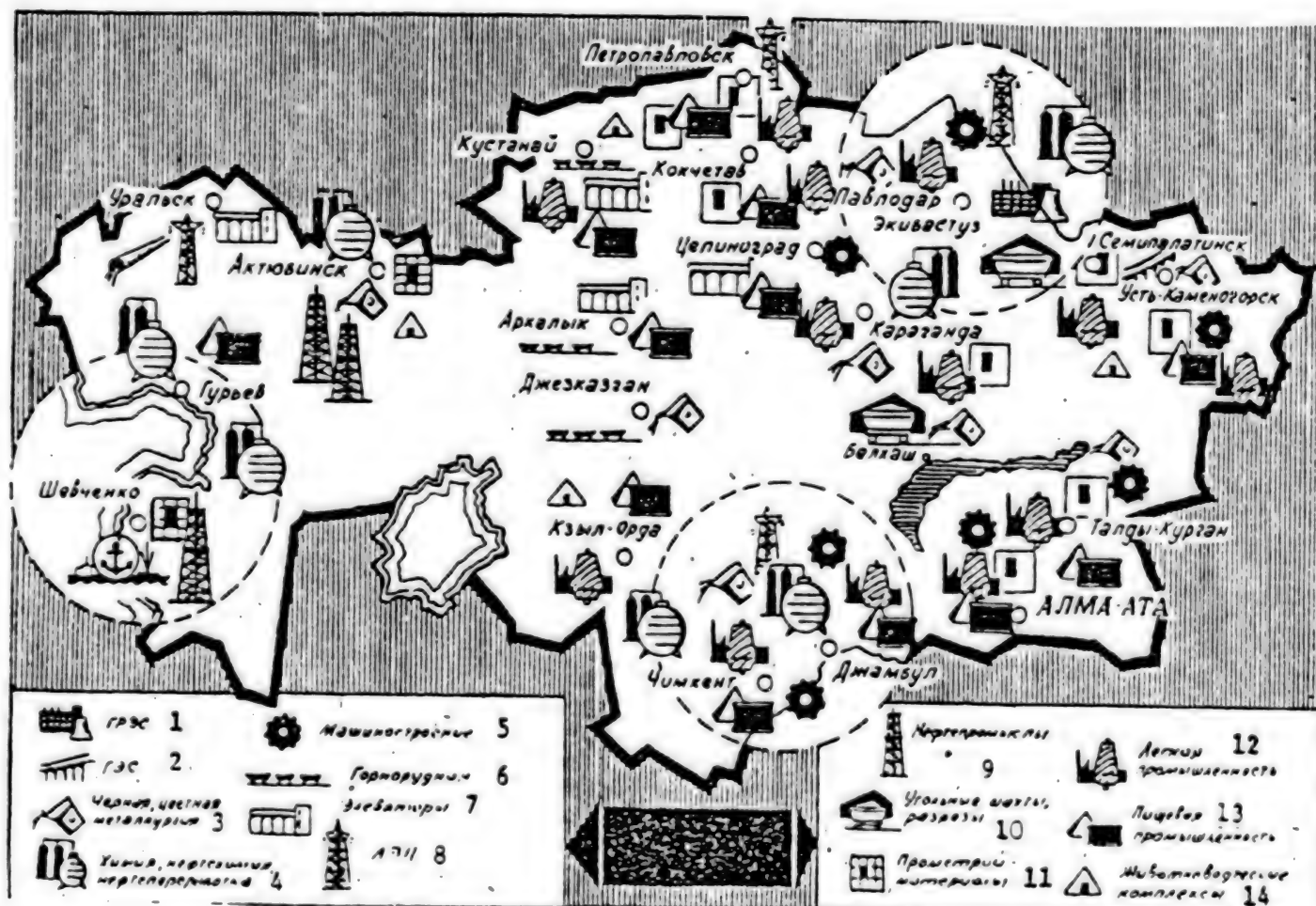
Take a look at this schematic map of our republic. Only a small number of the new construction sites of the current Five-Year Plan is indicated on it. But even this approximate scheme provides a quite clear idea about the diverse character of present-day construction. The realization of the program which has been mapped out for the 11th Five-Year Plan means that new enterprises in ferrous and nonferrous metallurgy and in the fuel, chemical, machine building, light, food, and meat and dairy industries will begin to operate, and new powerful electric transmission lines, comfortable residential houses, children's and school institutions, hospitals, and cultural and domestic and administrative buildings will appear.

The first year of the 11th Five-Year Plan has become history. What did it contribute to the work of creation on Kazakh land and what kind of baton did it hand over to the new year--the year of the glorious 60th anniversary of the formation of the USSR?

A week ago KAZAKHSTANSKAYA PRAVDA informed its readers that at the Yermakov Ferroalloys Plant the new super-powerful furnace No. 63 has been put into operation. This is a unique engineering installation which embodies the best achievements of modern engineering thought. Here for the first time in the world practice of the creation of such furnaces the tub has been made a rotating one. The experience and mastery of the construction and installation workers of



"Yermakferrosplavstroy," "Kazpromtekhmontazh," and "Kazelectromontazh" made it possible to successfully cope with difficult tasks. The furnace is operating well.



Key:

1. State regional electric power station
2. Hydro-electric power station
3. Ferrous, nonferrous metallurgy
4. Chemical, petrochemical, petroleum refining
5. Machine building
6. Mining
7. Grain storage units
8. Electric transmission lines
9. Petroleum fields

[Key continued on following page]

10. Coal mines, pits
11. Industrial construction materials
12. Light industry
13. Food industry
14. Animal husbandry complexes

The past year has brought quite a few other major victories in capital construction. The third 500,000-power-bloc at the Ekibastuz State Regional Hydroelectric Power Station-1 has already been supplying the economy with electricity for more than 10 months. . . . The Ural River now has operating over it a guy crossing--a highly complex hydro-engineering installation which will make it possible to flood more than 35,000 hectares of the arid Aznabay-Taypak tract. . . . Around 500 petroleum and gas wells have gone into operation. . . . Thousands of kilometers of new electric transmission lines are already performing their silent but very important work for the national economy. . . . Polystyrol shops at the plastic plant in Shevchenko, zinc and battery shops at the Leninogorsk Poly-metallic Combine. . . . Garment Factories in Petropavlovsk, Zyryanovsk, and Pavlodar. . . .

You cannot count them all. Suffice it to say, that last year more than 100 enterprises and large shops and capacities went into operation. In addition, the population received millions of square meters of well-built housing and many social and cultural facilities. In all, more than 6 billion rubles were spent for these purposes.

The successes which have been achieved are a good foundation for the fulfillment of the construction plan of the second year of the five-year plan. This year will be somewhat unusual for construction workers in the sense that without any appreciable increase in the amount of capital investments it will be necessary to sharply increase the amount of fixed productive capital which is delivered for operations.

Touching upon this question in his report at the Fourth Plenum of the CC of the Communist Party of Kazakhstan, the member of the Politburo of the CC CPSU and First Secretary of the CC of the Communist Party of Kazakhstan comrade D. A. Kunayev noted that in order to achieve our goal the chief direction of all of the work of construction workers during the second year of the 11th Five-Year Plan has to become a concentration of forces and resources on the most rapid completion of those enterprises which are capable of ensuring the greatest increase in output, an acceleration of scientific and technological progress, the opening up of bottlenecks, and the elimination of disproportions.

In connection with this, serious tasks have been set before the collective of the republic's almost 700,000 construction workers. One of them is a maximum acceleration of work on the chief object which is represented by the Ekibastuz Fuel and Energy Complex. Here it will be necessary to ensure in the shortest possible time the efficient work of the 4th and to commission the 5th and 6th energy blocs of the Ekibastuz State Hydroelectric Power Station-1. A vast construction program

will be carried out at other highly important objects of the Karatau-Dzhambul, Mangyshlak, and Pavlodar-Ekibastuz territorial production complexes. Measures are being taken to speed up the work rates in the construction of large capacities for ferrous and nonferrous metallurgy enterprises. In particular, if we are speaking about nonferrous metallurgy, this concerns above all the Zhayrem, Akchatauz, Achisay, and Dzhezkazgan combines. Ferrous metallurgy will obtain new capacities at the Kachar and Don ore enriching combines, the Yermakov Ferroalloys Plant, and other enterprises. The construction of the Shul'binsk Hydroelectric Power Station will be intensified. All of the start-up projects of the branches of group "B" have been taken under special control. In all, it is planned to commission more than 90 capacities and objects in 1982.

In addition, according to the plan for the year, it is planned to commission more than 6 million square meters of housing space, children's preschool institutions for 32,000 children, and general educational schools for 74,000 pupils. The hospital system will grow by 3,700 beds.

The annual total of capital investments will come to 7 billion rubles.

Through the will of the party and the people whole cities and settlements are rising up and the industrial map of the republic is changing radically. The successful realization of the construction program of the coming year will be another step forward in the social and economic development of Kazakhstan and a worthy contribution to the accomplishment of the tasks posed by the 26th CPSU Congress and the 15th Congress of the Communist Party of Kazakhstan.

2959

CSO: 1830/227

## CONSTRUCTION

RENOVATING MOSCOW FIVE-STORY HOUSES, SERIES 1-MG-300, 1605-AM AND 1-511

Moscow STROITEL'STVO I ARKHITEKTURY MOSKVY in Russian No 11, Nov 81 pp 22-23

[Article by Candidate of Architecture G. Timokhov: "Future of the Five-Story House: Modernization Proposals"]

[Text] As the tasks set by the General Plan in the area of providing Muscovites with housing are resolved and, as a consequence, the demands for quality housing increase, it becomes possible and necessary to accelerate the rates of repair and renovation work aimed at bringing buildings built long ago into conformity with modern needs.

Under these conditions, the interest architects and engineers expressed in a special edition on questions of the operation, major overhaul and renovation of five-story industrial houses built in the late 1950's and early 1960's is quite understandable.

How can the future of houses which literally enraptured many thousands of Muscovite families in the comparatively recent past and ensured the possibility of single-family apartments by affirming this principle in all subsequent years of housing construction be determined more correctly? There is no unambiguous answer. On the one hand, five-story houses no longer correspond to modern ideas about housing comfort, and on the other, they represent much material value (comprising more than 12 million square meters of capital housing).

This contradictory description of five-story housing causes corresponding conflict in the opinions specialists have of its future. Which is preferable, write-off, major overhaul or renovation? Where is the expediency limit for the decision being made?

In this complex matter, we cannot do without scientific research on a broad range of questions, including an exhaustive description of the buildings themselves, structural and layout features, city-planning, economic and social factors and, finally, experimental renovation of different series of buildings which would enable us to reveal in practice unforeseen situations which are unavoidable when experience is lacking.

A comprehensive review of tasks connected with the city's five-story housing would help us properly determine the future of each series of houses or an individual house and to achieve good economic and social efficiency of renovation.



Relying on results of research done by the MNIITEP [Moscow Scientific Research Institute of Standard and Experimental Design], let us note that, although five-story houses as a whole have substantial shortcomings which are now being felt especially sharply on a background of significant achievements in new housing construction, these shortcomings are manifested in different ways and degrees in different housing series. In view of the differences in architectural-layout, structural, operating and other characteristics, the approach to subsequent use of the houses must obviously be differentiated as well. Some might be overhauled and occupied, for example, based on a higher norm of housing space per person so as to compensate for shortcomings not being eliminated; it might turn out to be appropriate when overhauling others to change the layout so as to meet modern requirements, including additions in some instances. In this regard, an addition would obviously make sense only if the house's layout could be changed to provide new apartments with sufficiently high qualities. Such layout changes would depend foremost on the structural plan of the house.

The MNIITEP research paid special attention to design resolution quality, since they are not renovation variables (the leader of the design portion of the project was engineer G. Kaganovich). If such factors are ignored, even a well-chosen layout change will not yield the desired results and the funds spent on the renovation will turn out to be unjustified. Such series would include the II-32, II-35 and K-7. All three used rolled thin-walled corrugated ("waffle") items as roof component baffles. Outer and inner walls in the II-35 series were made with such panels. The "waffle" panels have many cracks and the floor panels have considerable sag. The roof and inside wall sound insulation (140-mm brick in the II-32 series and 40-mm thin-walled blank wall in the K-7 series) does not meet modern SNiP [construction norms and regulations] requirements. The outside wall joints have seepage and freezing.

In light of the above, renovation anticipating the creation of new layouts should be considered inappropriate for the enumerated housing series. However, these houses are suitable for major overhaul and reoccupancy at a higher norm of housing space per person, and in individual cases they can be written off.

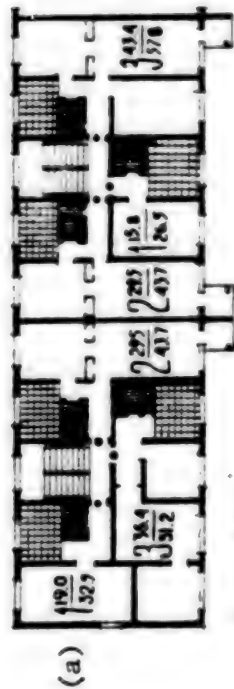
From the viewpoint of relayout, the 1-MG-300 and 1605-AM series are more suitable.

The transverse bearing walls of the 1-MG-300 series are 14-cm concrete panels and the roof is continuous 13-cm reinforced concrete panels. This permits eliminating a number of structural-operating shortcomings inherent to these series. When layout alterations are made, new door openings can be installed in the transverse bearing walls (if 1.5- to two-meter partitions are maintained between openings). A portion of the longitudinal panels can be removed. The bathroom and laundry facilities can be moved (if openings are made for new vents along the working direction of the roof panels).

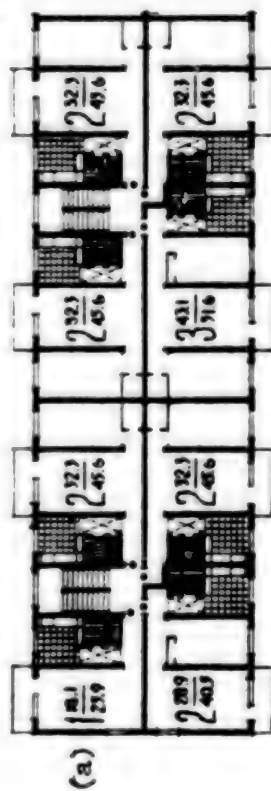
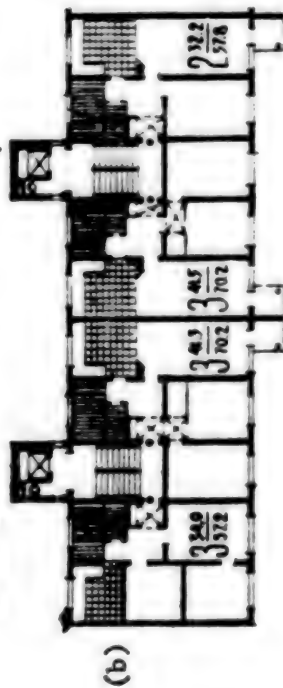
The wall and foundation safety margin permits increasing the height of these houses to nine stories. Of course, additions will be appropriate only for a large group of houses for which organizing (resuming) the production of the appropriate items will be justified.

The basis of the layout resolution for houses of this series is a three-apartment section with a set of apartments 1-2-3 in facing and consecutive sections.

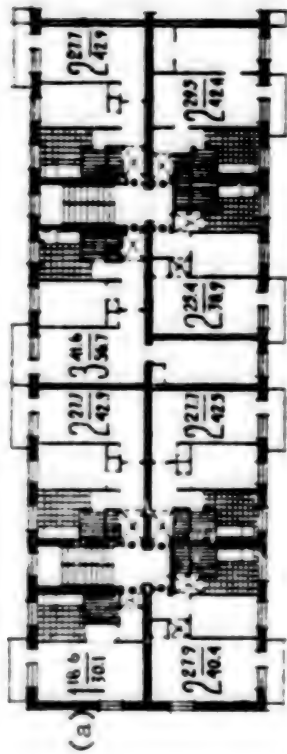
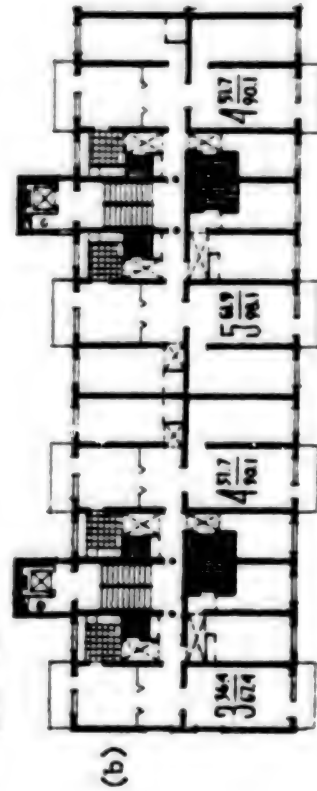
The main layout shortcomings are less apartment and subsidiary premises (entranceway, bathroom and laundry) space than is called for by modern normatives, lack of built-



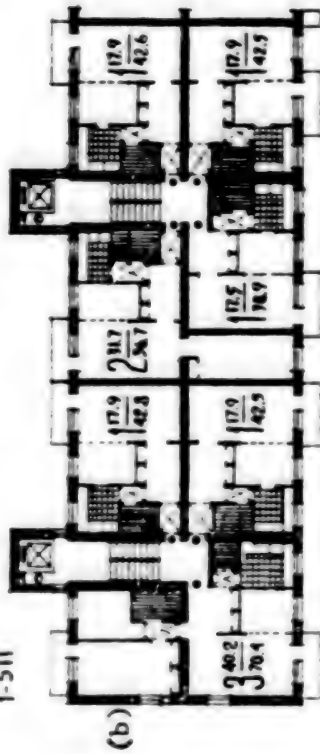
I-MG-300



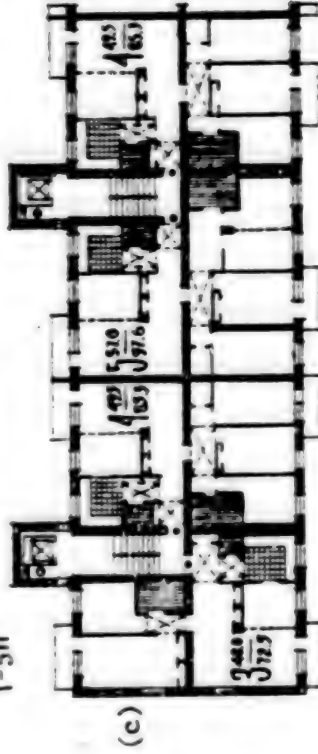
1605-AM



1-511



1-511



1. Plans for a standard five-story series 1-MG-300:
  - a) existing arrangement
  - b) proposed layout
2. Plans for a standard five-story series 1605-AM:
  - a) existing arrangement
  - b) proposed layout
3. Plans for a standard five-story series 1-511:
  - a) existing arrangement
  - b, c) proposed layouts

in closets, and so on. In order to improve layouts, we need first of all to increase the size of the apartments, which can be done in this case by reducing the number on the stair landing. The three apartments (1-2-3), with a total space of 128 m<sup>2</sup>, can be made into 2B-3B apartments with a total space of 57 m<sup>2</sup> and 70 m<sup>2</sup> respectively, each of which will be slightly better than the normatives in terms of total space: by 10 percent for the 2B and five percent for the 3B.

The layout alteration plan anticipates widening the entranceway and providing it with a built-in closet, installing a kitchen-dining area conveniently connected to a common room and an airy bathroom with considerably more space so it can be used as a work room (for laundering, ironing, and so on) in addition to its basic function. An orientation towards two opposite sides of the horizon ensures cross-ventilation and a visual link with the outside.

A three-room apartment is obtained in the 57-m<sup>2</sup> end section (that is, the two-room space) through an additional light front.

Making door openings is anticipated in individual instances, but the position of the bathroom and laundry facilities is retained.

The transverse bearing walls of the 1605-AM series are 12-cm concrete panels and the roof is 10-cm continuous reinforced concrete panels. Adding to the height of these houses can be considered inappropriate in view of the low support capacity of the bearing wall panels.

The basis of the layout resolution is a four-apartment section with apartment sets (meridional variant) of 2-3-2-2 in consecutive section and 1-2-2-2 in facing section. The total area of the consecutive section is 188 m<sup>2</sup> and of the facing section -- 157 square meters.

The layout shortcomings of the apartments are the same as in houses of the 1-MG-300 series; in addition, these apartments have common passageway rooms (besides one-room and two-room in the facing section).

The inflexibility of the design does not permit reducing the number of apartments in a section (consecutive) to, say, three two-room type-B apartments or type-M three-room apartments, although such apartments would correspond to the normatives in terms of total space. This is why the layout alteration plan outlines installing two apartments in a section -- consecutive -- 5B-4B, 5 and 15 percent above normative space, respectively; end -- 3B-4B, apartment 4B alone exceeds normative space by 15 percent.

The premises in the apartments are functionally zoned by organizing two groups of bedrooms, one at the entrance and one in the back of the apartment. The kitchens are the same size as before, but are intended only for preparing food, while the families will be gathering for meals in the dining room, which will be connected directly to the kitchen. The dining room could be connected to a hall providing a convenient link with the sitting room. Placement of the dining room, hall and sitting room on one axis imparts an imposing appearance to the apartment's day zone, visually expands its spaciousness and enriches the composition of the interior.

Houses of the 1-510, 1-511 and 1-515 series offer the greatest potential for renovation. They are the same type of design (inside longitudinal and outside bearing

walls, with brick inside bearing walls in the 1-511 series and concrete walls in the 1-510 and 1-515 series) and layouts. After strengthening the walls and multiple-hollow flooring, additions increasing the height to nine stories become feasible.

Let's examine layout alteration variants for the 1-511 series.

A unitized four-apartment section with a set of apartments for a meridional variant of 1-2-2-2 in the end section and 3-2-2-2 in the consecutive section has been adopted as the layout resolution basis. Total space is 156 m<sup>2</sup> in the end section and 181 m<sup>2</sup> in the consecutive section.

The main shortcomings of the apartments is the lack of conformity to normatives both for total apartment space and for subsidiary premises (kitchen, entranceway, bathroom and laundry), the presence of "loans" and their inclusion in housing space, a lack of built-in closets, and so on.

The structural features of houses of this series (inside longitudinal bearing walls) provide two layout alteration variants to obtain both few-room (given a meridional orientation) and many-room apartments.

The first variant anticipates the possibility of obtaining apartments with few rooms while retaining the former number of rooms on the stairwell. This method is possible when reducing the number of rooms in apartments. Instead of a 3-2-2-2 consecutive-section set of apartments, we can obtain a 2-1-1-1 set, and instead of a 1-2-2-2 end-section set, a 3-1-1 set. In this regard, total apartment space will correspond to and slightly exceed the normatives: one-room apartments by 16 percent, two-room apartments by nine percent and three-room apartments by seven percent.

The layout alterations result in expansion of the subsidiary premises space, ensuring a convenient link between the kitchen-dining room and the common room, and the apartment entrance is equipped with built-in closets. In addition, the three-room apartment receives precise functional zoning thanks to the delineation of a sleeping area equipped with a modern bathroom and a collective area including the common room, dining room, kitchen and a small bathroom. One positive quality is that the apartment is oriented to three sides of the horizon.

The second layout alteration variant anticipates a reduction in the number of apartments on the stairwell by combining pairs of adjacent apartments.

As a result of this layout alteration, a set of consecutive-section 3-2-2-2 apartments is replaced by a set of 5-4. In the end section, the 1-2-2-2 set of apartments becomes a set of 3-4. In the five-room apartment, the normative for space is exceeded by four percent, and in the four-room -- by nine percent. All the apartments have a precise functional zoning. The two-side orientation of the apartments deserves a positive evaluation.

We see from the examples given that the basic layout alteration method is to increase subsidiary space in small apartments, which is achieved by:

- changing the balance of living to total space within the geometric boundaries of existing apartments (reducing or not changing the number of rooms);
- reducing the number of apartments in a section.



The total space is practically unchanged in the various layout alteration variants. Decreasing living space is associated with redistributing the balance of living and total space in favor of an increase in the latter, which agrees with the existing normatives.

Economists estimate that the cost per square meter of living space when altering the layout of houses of different series to produce apartments with few or many rooms is considerably less than the cost of a square meter of housing in new construction, roughly 32 to 40 percent of it. The figures are very convincing.

The economic calculations given here do not signify that all five-story houses must be renovated. It only shows the possibilities available to us in this area. The decision must be made on each house depending on concrete conditions -- section of the city, demographic composition of the families, composition of apartments in new elective construction, financial possibilities, and also the capacities of construction-repair organizations in each period under review.

The fate of each house being renovated must be decided on a scientific basis as part of a complex including many questions -- city planning, economic and social. We need to concentrate our efforts on further developing scientific research. The immediate start of experiments on the major overhaul and renovation of five-story houses will be very beneficial.

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## CONSTRUCTION

### PROBLEMS AT VOLKOVYSK PLANT EXAMINED

#### Construction Site Visited

Moscow SOTSIALISTICHESKAYA INDUSTRIYA in Russian 10 Jul 81 p 1

[Article by N. Kernoga, special correspondent for SOTSIALISTICHESKAYA INDUSTRIYA: "A Construction Site Without Construction Workers"]

[Text] Two contradictory reports about the same construction site have arrived in our editorial office. USSR Deputy Minister of Industrial Construction A. Pankov informed the editorial office: "The start of operations of capacities for turning out eight million rubles worth of products per year has been implemented by the BSSR Ministry of Industrial Construction in 1980 at the Volkovysk Roofing and Construction Finishing Machinery Plant. During the current year capacities capable of turning out another 12 million rubles worth of products are planned to be started up at this plant. Measures that will ensure completion of the annual plan for construction and installation work have been worked out by Trust No 30 in collaboration with the plant's management. Control has been established by the ministry over the progress of construction."

From the report of G. Baseynik, chief of VPO [Volkovysk Planning Section] in Soyuzstroyinstrument it follows that people have been taken off of the construction of the Volkovysk plant and the structures that are subject to be turned over during the current year are empty. Who then is correct?

Your correspondent visited the construction site. Two starting complexes with a total area of about 18,000 square meters should now be turned over here. This is almost twice as much as there already is. How are things going with the construction workers? My interlocutor--V. Kudryachev, chief engineer at the plant--becomes gloomy at this question:

"Let's go over the grounds and you will see for yourself."

We passed by seven structures, a compressor, a cooling tower, a gas pipeline and others. And we did not see a single construction worker at any of them. Not one!

"And yet all of these structures should already have become operational during the past year," explains the chief engineer. "If work is done at such a pace as at present construction workers will not turn them over this year either."

The lack of structures that are vitally needed by the plant is presenting the collective with quite a few troubles. For example, the furnace should be heated by gas. But it is impossible to supply it to the plant--the gas pipeline is not ready. And the enterprise is forced to transport heavy oil from far away by its own means of transportation. The compressor is not completed--one must be satisfied with the temporary plan to search for mobile compressors. There is no industrial gas station and people carry heavy containers themselves....

For the sake of justice it must be said that several crews were working on laying floors and another two were installing equipment in the main building. But they, certainly, don't make the weather. Almost all of those taking part in the construction work, especially the subdivisions of the BSSR Ministry of Installation and Special Construction Work have permitted quite a few delays. It would seem that on warm sunny days, unlike now, one should make up for what has been neglected. Alas, quiet reigns at the structures.

As an excuse a representative of the general contractor, F. Lebed', chief engineer of SU-173 [Construction Management 173] in the Grodno Trust No 30, named quite a few reasons that supposedly hindered normal work. But all of them, with the exception of one or two, do not deserve serious discussion. No excuses were sought at all for several projects. In particular, nothing is hindering the laying of the gas pipeline. But the work is put off from week to week. In such a manner one could wait until spring. And the rains will burst forth.

The Volkovysk plant is a special enterprise: it is of key importance for construction. It is impossible to improve labor productivity in the sector without extensively expanding means of mechanization. The need for these means is very great. And therefore the erection of plants that turn out construction tools and finishing machinery has been placed under special control. And the indifference of the administrators of Trust No 30 and the subcontractor organizations is at least surprising--they are rarely at the construction site and do not try to find out its needs a great deal. The republic Ministry of Industrial Construction and Ministry of Installation and Special Construction Work are not rendering business assistance. For example, all of the reinforced concrete for building the cooling tower should have been delivered last year already. However, at one of the enterprises in the BSSR Ministry of Industrial Construction production of it dragged on until June of the current year.

And how do the local party organizations evaluate the situation? My report about the fact that there is not one construction worker at the starting projects was met with discouraged confusion at the Volkovysk gorkom of the Belorussian Communist Party. But soon they found the right thing to say: many problems are being solved at the level of oblast and republic organizations and the gorkom does not always succeed in influencing them.

Last year staff meetings were regularly held at the construction site under the leadership of I. Shcherbakov, instructor in the Grodno obkom of the Belorussian Communist Party. Now the staff has not been summoned once. Have they run out of questions for the day's agenda? No, they are increasing all the time to the degree in which the time for turning over the capacities approaches.

#### Ministry Engineers Questioned

Moscow SOTSIALISTICHESKAYA INDUSTRIYA in Russian 24 Sep 81 p 3

[Article by N. Kernoga, special correspondent of SOTSIALISTICHESKAYA INDUSTRIYA: "A Lie in a Business Envelope, the Authors of the Form Reply Give an Interview"]

[Text] The leading engineer in the Belorussian Ministry of Industrial Construction, V. But'ko, was given the task of preparing a reply to the report "A Construction Site Without Construction Workers" published in SOTSIALISTICHESKAYA INDUSTRIYA 10 July of this year. The report contained criticism which was addressed to the administrators of Trust No 30 and also to the republic Ministry of Industrial Construction and the Ministry of Installation and Special Construction Work because of the delay in the construction of the Volkovysk Roofing and Construction Finishing Machinery Plant.

V. But'ko prepared the reply along with the leading engineer in the Ministry of Installation and Special Construction S. Genin. This is what issued forth from their pens:

"The Ministry of Industrial Construction and the Ministry of Installation and Special Construction Work have evaluated the progress of construction at the Volkovysk plant. Measures have been drawn up by the general contractor (Trust No 30) together with the client and subcontractor organizations that will ensure the start up of the capacities within the established periods of time. The problems of completely providing the construction site with mechanisms and workers have been solved by the ministries. At the present time construction and installation work has been completed at the purifying structures, the gas pipeline and compressor. Measures are being taken to speed up the work on the main building, the administrative and everyday building and the industrial gas station.

However, the client must issue revised documentation for the main building (vulcanization shop) and deliver the equipment, reinforcing and furnace that are missing for the start up of capacities on time.

"Construction of the plant has been put under the continuous control of the ministries."

The reply was signed by K. Tverdov, the deputy minister of installation and special construction work, and A. Trusov, deputy minister of industrial construction. Obviously, they signed without even scrutinizing the substance of the document. Otherwise they would have discovered the "linden tree" without fail.

The reply was sent to the editorial office on 3 August, but nothing about which the deputy ministers reported was, as they say, detected as being present, even in the middle of September. Construction of the compressor and gas pipeline had not been

completed. Testing of the purification structures was not going on. And they hadn't even begun to build the industrial gas station, rain water pumping station, oil traps and other structures that are vitally needed by the plant. There were insufficient mechanisms. They already took the workers off the administration and everyday building in May. There were one-third less people than are required at the construction site. This is how matters stand today.

How was the lie born? First, I will take the interview with S. Genin, the leading engineer in the Ministry of Installation and Special Construction Work.

"Have you investigated the client's claims?"

"No, I only visited my own subdivisions."

"It says in the reply that was prepared by you that measures are being taken to speed up the work. Specifically what measures?"

"Well, something is being done.... But that, incidentally, is a question for the Ministry of Industrial Construction. Our subdivisions are not doing poor work."

"How have they completed the plan for the eight months?"

S. Genin is quiet. We both know that the majority of subcontractor subdivisions are not meeting the plans.

"It says in the reply that construction work has been put under the constant control of the two ministries. What does constant mean--daily, weekly, every decade?"

"Subdepartmental organizations regularly phone us and report about the results...."

"How regularly?"

My interlocutor is silent. Commentary, as they say, is unnecessary.

I also had an interview with V. But'ko.

"Your colleague S. Genin believes that the question about the measures being taken to speed up construction relates to the competence of the Ministry of Industrial Construction...."

"Yes, measures are being taken."

"Name the most important ones, please."

V. But'ko is quiet.

"It is written in the reply that the construction site has been completely supplied with personnel. But it is not at all like that. Where does such a 'reading' come from?"



Not waiting for an explanation I ask the following question:

"The construction workers' principal claim against the client is the lack of technical documentation for the vulcanization shop. Do you know that this shop is not a part of the starting complex?"

It turned out that V. But'ko did not know this. Nothing remained for him but to speak honestly about the creation of the "linden tree."

A teletype message by V. Makarov, administrator of Trust No 30 became the basis for it. Information from it migrated to the reply which was drawn up in answer to the paper's article without any checking. The leading engineer, V. But'ko, was not in the least informed about the fact that the administrators of the trust had been criticized in the report. It was not difficult to surmise that they attempted to find justification by any means. This is what happened.

Only one question remained open: how did it happen that the deputy ministers sanctioned an obvious lie? Unfortunately, it turned out that K. Tverdov was not at his desk. But a conversation did take place with A. Trusov.

"When signing the reply to the editorial office did you ask But'ko what measures were really being taken?"

"As a rule I always inquire in such situations but here I did not ask. It is possible that a purely psychological aspect influenced me--the first signature was already in place. So I decided that everything was in order.... Yes, you are correct: the situation at Volkovysk is not one of the best. At present, they are completing construction of the school because it was not able to be turned over by 1 September. People were diverted from the plant structures. But as soon as we complete the school we will give all our attention to the plant.... An error resulted in the reply to the editorial office.

Was this "error" accidental? The first sentence of the reply already makes one alert: "The Ministry of Industrial Construction and the Ministry of Installation and Special Construction Work have evaluated...." On what level? At the board level? At the department level? Nevertheless, we already know how they "evaluated." Maybe this is the regular practice of reacting to a newspaper article? The form reply mechanism has already proved to be very worn. Yet the very fact of the poor organization of the construction work did not surprise or perturb anyone in the ministry, although it seemed it should have startled everyone--both the administrators and the party organizations. For who better than they would know that the Volkovysk plant was in the category of the most important starting structures for the five-year plan? And so it is not late even now for the party organizations of both ministries to become involved with this problem.

## Party and Ministry's Replies

Moscow SOTSIALISTICHESKAYA INDUSTRIYA 26 Dec 81 p 2

[Article: "A Lie in a Business Envelope"]

[Text] First we shall recall the previous history of the appearance of the material under the above headline in SOTSIALISTICHESKAYA INDUSTRIYA (the 24 September issue of this year). The report "A Construction Site Without Construction Workers" was published in the newspaper on 10 July of this year. It spoke of the reasons and the culprits for the serious deficiencies in building the Volkovysk Roofing and Construction Finishing Machinery Plant. In answer to this publication the editorial office received a letter in August from the Belorussian SSR Ministry of Industrial Construction and Ministry of Installation and Special Construction Work, the organizations that are doing the work at the Volkovysk plant structures. Responsible workers in both ministries, having prepared and signed a joint reply, affirmed that the deficiencies that were noted in the article, "A Construction Site Without Construction Workers" either had been eliminated or were being eliminated. However, after repeated examinations of the actual state of affairs it became clear that this information proved to be a "linden tree." How it was born was told in the interview, "A Lie in a Business Envelope." The newspaper is publishing the replies to this article today.

The Central Committee of the Belorussian Communist Party reports that the interview "A Lie in a Business Letter" has been reviewed. The critical remarks that were expressed in it are acknowledged as being correct.

The interview was discussed by the boards of the BSSR Ministry of Industrial Construction and the BSSR Ministry of Installation and Special Construction Work and also at staff meetings of these ministries, in the Grodno obkom secretariat of the Belorussian Communist Party and at the Volkovysk party gorkom bureau. During the course of the review fundamental evaluations were made of the incorrect reaction to the critical remarks in the press on the part of the departmental administrators in the BSSR Ministry of Industrial Construction, the BSSR Ministry of Installation and Special Construction Work, Construction Trust No 30 and the Grodno Installation Administrations in the "Belsantekhmontazh" No 2 Trusts and the "Promtekhmontazh" Association. Measures were fixed and are being implemented to speed up the pace of work, to eliminate the delay that has been permitted and to ensure that the capacities at the Volkovysk Roofing and Construction Finishing Machinery Plant that are specified by the plan are put into operation during the current year. Comrade V. V. Makarov, director of Trust No 30, and comrades V. V. Ustinovich and V. V. Kostyuchenko, chief of the Grodno administrations in the "Belsantekhmontazh" Trust No 2 and the "Promtekhmontazh" Association were given reprimands and comrade S. S. Genin, leading engineer at the BSSR Ministry of Installation and Special Construction Work was given a severe reprimand by the boards of the BSSR Ministry of Industrial Construction and the BSSR Ministry of Installation and Special Construction Work for not taking the proper measures for building the plant's structures, for the lack of discipline displayed and for presenting non-objective information.

Comrade A. Ya. Trusov, BSSR deputy minister of industrial construction and comrade K. D. Tverdov, BSSR first deputy minister of installation and special construction work were cited for a lack of proper control over the activities of the organizations

and services under their jurisdiction. They were strictly warned about not permitting such incidents in the future.

The Grodno obkom of the Belorussian Communist Party and the Belorussian construction department in the Communist Party Central Committee have established control over the progress of construction of the plant's structures.

Yu. Kolokolov  
Secretary of the Belorussian Communist  
Party Central Committee

The interview "A Lie in a Business Envelope" was reviewed by the board of the BSSR Ministry of Installation and Special Construction Work and at an open party meeting of the ministry's staff. The criticism addressed to the ministry concerning the unsatisfactory attitude toward construction of the Volkovysk Roofing and Construction Finishing Machinery Plant is acknowledged as correct.

The board obligated the administrators of the installation organizations to completely supply the construction site with the necessary amount of workers, to solve all of the material problems and to ensure that the schedules for producing work that were worked out together with the general contractor and the client are completed.

Attention was given by the chief of the production management administration, comrade I. I. Vorotnitskiy, to the low level of executive discipline by the workers in the administration when preparing the replies to the critical newspaper articles and to the lack of control.

It was suggested that the chiefs of the administrations and departments in the ministry and the administrators of the organizations take measures to improve the work that received critical remarks and suggestions, to evaluate them in depth, to take specific measures and to establish strict control to implement them, and to decisively eradicate the actuality of the formal attitude toward newspaper articles.

At the same time the board requested that the BSSR Ministry of Industrial Construction make everything structurally ready for installing equipment at a number of starting structures.

It was decided that completion of the established schedules and the unresolved problems for this project be regularly reviewed at an operative meeting in the ministry.

I. Antonovich  
Minister of Installation and Special Construction Work in the Belorussian SSR

A reply was also received from comrade Golovan, secretary of the Grodno obkom in the Belorussian communist party. The measures required to ensure the start up of the structures at the Volkovysk plant have been worked out. The client assigned 53 workers to help the builders. Control by the Volkovysk gorkom in the Belorussian communist party was strengthened over the progress of construction.

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## CONSTRUCTION MACHINERY

### MINISTRY COLLEGIUM RESPONDS TO CRITICISM

Moscow EKONOMICHESKAYA GAZETA in Russian No 45, Nov 81 p 2

[Article by Yu. Govorov and R. Masgutov, members of the collegium of the Ministry of Construction, Road and Municipal Machine Building: "'Developing Construction and Road Machine Building'"]

[Text] The Ministry of Construction, Road and Municipal Machine Building has examined the critical remarks contained in the review "Developing Construction and Road Machine Building" (EG, No 38). The review correctly noted that increasing economy of operation, reducing weight and increasing productivity in machinery are associated foremost with accelerating changing them over from mechanical to hydraulic drive. In order to increase the production and improve the quality of hydraulic drive elements of machinery and equipment in the branch, the "Soyuzstroygidromash" all-union production association was created in June. Previous restrictions on the use of hydraulic drive in developing new machines have now been removed.

The ministry leadership, which views increasing the mechanization of construction jobs, and especially of finishing work, as very important, has taken steps to broaden the products list and increase the production of construction-installation tools. At present, the overall products list of mechanized tools in production is 246 items. However, the production volume of these tools does not, as the review correctly pointed out, enable us to fully meet the orders for them yet. Much work along this line faces both the Ministry of Construction, Road and Municipal Machine Building and related suppliers.

Work results for the first 8-9 months of this year have been reviewed in the ministry collegium. Particular attention was paid to underfulfillment of the plan in terms of products list and to lagging enterprises. Collegium resolutions have outlined concrete steps to eliminate existing shortcomings.

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## CONSTRUCTION MACHINERY

### 'STROYDORMASH-81' EXHIBIT OF CONSTRUCTION, ROAD MACHINERY

Moscow STROITEL'NAYA GAZETA in Russian 10 Jun 81 p 3

[Article by V. I. Chudin, minister of Construction, Road and Municipal Machine Building and "Stroydormash-81" Exhibit Organizing Committee Chairman: "Inspection of New Equipment"]

[Text] The Second International "Stroydormash-81" Exhibit will be held in Moscow from 11 through 25 June.

Technical progress in capital construction would be unthinkable today without the accelerated development of construction and road machine building. The introduction of progressive machinery and equipment and means of mechanization has permitted a significant increase in labor productivity in recent years.

In terms of production of excavators, cranes and many types of road and construction machinery, the USSR has long been the world leader. This, our country manufactured 42,000 excavators, more than 46,000 truck-mounted, wheeled and caterpillar cranes, 46,000 bulldozers and more than 11,000 scrapers in 1980.

The production of technological equipment for building materials industry has grown significantly. The production of cement, prefabricated reinforced concrete parts and components and various wall, insulation and soundproofing and other building materials has been expanding continuously on a base of this equipment. The production of mechanized tools and finishing machines has been increased.

The tasks of developing and utilizing machines to comprehensively mechanize jobs in industrial, agricultural, housing and road construction have been solved.

During the 10th Five-Year Plan alone, series production of more than 450 new models of highly efficient machines was mastered. The exhibit will demonstrate the hydraulic EO-6122 excavator, with scoop capacities of 1.6 to 3.2 m<sup>3</sup>, and the EO-5123, with scoop capacities of 1.25 to 2.8 m<sup>3</sup>, which is on tractor-type caterpillar tracks.

The 26th CPSU Congress set us the tasks of developing and mastering the release of highly productive machinery for comprehensively mechanizing basic jobs at all stages of construction production, and it did so as precisely as possible. Four comprehensive programs have been worked out which anticipate optimizing the structure of the machinery and equipment being produced, improving their technical level and quality, introducing new technological processes and materials and perfecting planning and management methods.



The first international exhibit of construction and road machinery and means of mechanizing construction-installation work was held in Moscow in August 1964 at Central Stadium imeni V. I. Lenin. The basic purpose of "Stroydormash-81" is to demonstrate the latest achievements of domestic and foreign science and engineering in the area of developing, creating and improving construction and road machinery and means of mechanizing construction-installation work and to exchange scientific and technical experience among Soviet and foreign scientists and specialists.

The 12 subject categories of the exhibit cover practically all types of construction equipment and means of mechanizing construction-installation work, beginning with machines for earthmoving and ending with a variety of mechanized tools and automated construction and road machinery control systems. In terms of scale, the equipment demonstration at "Stroydormash-81" significantly exceeds all international exhibits previously held in our country. It is at the USSR Exhibit of National Economic Achievements and in Sokol'niki.

Together with the Soviet Union, enterprises and organizations of nearly all countries of the socialist community are participating in the exhibit.

Companies and organizations of Austria, Belgium, Great Britain, Denmark, Italy, the USA, Finland, the FRG, Switzerland, Sweden and Japan will exhibit their output at the USSR Exhibit of National Economic Achievements and companies and organizations of the Socialist Federated Republic of Yugoslavia, Spain, the Netherlands and France, as well as individual companies from Italy, the USA, the FRG, Switzerland, Sweden and Japan, will be exhibiting in Sokol'niki.

The section of machinery for earthmoving, drilling, working frozen ground and hard rock will offer basically single-scoop construction excavators with scoop capacities of 0.25 to 2.5 m<sup>3</sup>, semitrailer and self-propelled scrapers with scoop capacities of 4.5 to 25 m<sup>3</sup>, wheeled and caterpillar bulldozers and bulldozer-cultivators, as well as industrial tractors for use as base vehicles for construction and road machinery.

The EO-3322V hydraulic excavator with a semiautomatic control system, the E-3332A excavator-grader with telescoping working equipment, which does both excavating and grading the bottoms of trenches and foundation pits, canal and drainage ditch sides, will interest specialists.

The section of loading-unloading equipment occupies an important place in the exhibit; it will present the very efficient single-scoop wheeled TO-21 front-loader, with its 15-ton load capacity, wheeled chassis, the pneumatic forced-suction cement unloader, with its productivity of 90 tons per hour, and the 22- and 14-ton TTs-2A and TTs-11 automatic cement hauler.

Highly productive new rotor excavators, canal diggers and machines for laying drainage pipes without trenches, and other equipment, will ensure a significant improvement in labor productivity in reclamation construction. For example, introduction of the ETTs-202A drainage pipe-laying excavators into reclamation construction will enable us to increase labor productivity five- to six-fold.

New domestic machines for building petroleum and gas pipelines will be shown in a special section. They will include the powerful TG-802 pipe-layer, with an 80-ton load capacity, the TG-502 pipe-layer, with a 50-ton load capacity, pipe haulers, a more all-purpose pipe-length hauler, pipe welding equipment, machines for working and filling trenches, and so on.

A large place will be given to modern mechanized tools and construction-finishing machines. Domestic plants produce more than 200 types of mechanized tools. The exhibit will present numerous models of electrically safe, double-insulated, electronically adjustable tools, vibration-safe riveting and chopping hammers, low-shock electric and pneumatic impact wrenches, and much more.

More than 150 foreign companies and organizations will display their output at the exhibit. The Business Center will become a unique business club for them, with every condition being provided there for representatives of Soviet foreign trade organizations and foreign companies to hold talks and make deals.

I am confident that the forthcoming exhibit will serve the cause of continued scientific-technical and trade cooperation between the USSR and foreign countries and that the broad exchange of experience will help Soviet specialists successfully cope with the capital construction program for the 11th Five-Year Plan as outlined by the 26th CPSU Congress.

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## CONSTRUCTION MACHINERY

### CONSTRUCTION, ROAD, MUNICIPAL MACHINE BUILDING TASKS IN NEW FIVE-YEAR PLAN

Moscow EKONOMICHESKAYA GAZETA in Russian No 38, Sep 81 p 2

[Article: "Developing Construction and Road Machine Building"]

[Text] Enterprises of the Ministry of Construction, Road and Municipal Machine Building are providing industrial, housing, road and reclamation construction, timber procurement and peat industry, and municipal services with modern equipment. The products list of the machinery and vehicles being supplied numbers about 2,000 items.

During the 10th Five-Year Plan, branch workers increased production volume 24 percent. Labor productivity increased 22 percent. Considerable work was done to improve designs and raise the technical level of earthmoving machinery, concrete mixers, and equipment for reclamation and building materials industry.

One important direction of technical progress which ensures a reduction in the metals-intensiveness of machinery and saving labor and energy in operation is the automation of their controls. Thus, the large-series production of automated graders, truck-mounted and tower cranes, asphalt-concrete and a number of other devices was organized this past five-year plan. In the 11th Five-Year Plan, we anticipate equipping scrapers and bulldozers with self-contained laser control systems.

This past year, the USSR State Committee for Science and Technology evaluated the technical level of output produced by the Ministry of Construction, Road and Municipal Machine Building. It showed that 65 percent of the items corresponded to the best foreign and domestic models and that 26 percent of the machinery and vehicles required modernization and improvement. Nine percent of the items it recommended be withdrawn from production in the near future.

Branch laborers are called upon to resolve big tasks in improving efficiency and work quality in the 11th Five-Year Plan. Simultaneously with the planned 30 percent increase in production volume in 1985 as compared with 1980, we need to ensure the preferential growth of deliveries of the most efficient machinery and equipment. Average excavator scoop capacity is to be increased by 14 percent, scraper capacity by 16 percent, the load capacity of caterpillar-track cranes by 32 percent, bulldozer power by 47 percent and automatic grader power by 50 percent.

Increasing the economy of operation, reducing the weight and increasing the productivity of the machines are associated foremost with accelerating changing them over from mechanical to hydraulic drive. What this will provide is shown in the following

example. A mechanical excavator with a scoop capacity of 2.5 m<sup>3</sup> weighs 94 tons, and a hydraulic model weighs 56.2 tons. It is capable of removing 370 m<sup>3</sup> of earth per hour, while the mechanical excavator can move 300 m<sup>3</sup>. Labor expenditures on technical servicing during operation are reduced.

At present, nearly 30 percent of the single-scoop excavators, upwards of 16 percent of the bulldozers and about 70 percent of the self-propelled boom cranes are being produced in the nonhydraulic version. The production of hydraulic motors and high-pressure hydraulic pumps, as well as hydraulic distributors, has not yet received the necessary development and remains a bottleneck in the Ministry of Construction, Road and Municipal Machine Building.

The basic assignments on increasing hydraulic equipment production in the 11th Five-Year Plan have been entrusted to the collectives of three plants, "Stroygidravlika" plant in Odessa, "Pnevmostroymashina" plant in Sverdlovsk and "Krasnyy ekskavator" plant in Kiev. The ministry is obligated to render these enterprises effective assistance in carrying out these responsible tasks.

The Voronezh, Donetsk, Kovrovskiy and Kostroma plants will be mastering new types of single-scoop hydraulic caterpillar-track excavators in the five-year plan. The service life of drive train parts and subassemblies is to be increased two- to three-fold, thus decreasing the demand for spare parts sharply.

Series production of a unitized gamut of hydraulic cranes with telescoping booms and load capacities of 25, 40, 63 and 100 tons on a special caterpillar-track chassis will be developed in the near future. They will be produced by Odessa Heavy Crane-Building Plant, Voronezh Excavator Plant and Nikopol'skiy Crane-Building Plant. The manufacture of 63- and 100-ton caterpillar-track cranes is being organized at "Volgotsemnash" plant in Tol'yatti. Use of this equipment will open up an opportunity for improving labor productivity in installing large reinforced concrete and metal components 1.5- to two-fold and for lowering net cost approximately 20 percent.

Machinebuilders will be increasing their contribution to land reclamation and irrigation construction in 1980-1985. According to the plan, "Meliormash" association in Mozyrskiy, the Bryansk Irrigation Machinery Plant and "Irpen'torfsmash" plant in Irpen' will increase their release of rotor trenching plows 1.4-fold and of ditch cleaners 1.5-fold as compared with the 10th Five-Year Plan. The production of other new equipment for reclamation workers will also increase. Tallinn Excavator Plant imeni 50th Anniversary of the USSR has been instructed to develop the release of a set of machines for laying draining pipe without trenches, that is, preserving the integrity of the fertile layer.

It is the duty of branch workers to raise the technical level, expand the products list and increase the production of mechanized and hand construction-installation tools and construction-finishing machinery. Thus far, orders for these tools have been met by only 65-70 percent, and by 40-50 percent for finishing machine. We plan to finish building the Dneprorudnensk and Volkovysskiy plants and to renovate and increase the capacities of a number of existing enterprises. The purpose is to bring the release of tools and machinery up to five million units in 1985 (3.5 million were produced in 1980). This will permit saving the labor of approximately 150,000 construction workers employed at plastering, painting, facing and other finishing jobs, raise productivity through mechanization, and facilitate the labor of another roughly 300,000 workers.



Progressive changes will occur in bulldozer production: the release of powerful caterpillar-track machines will be increased nearly five-fold, with a simultaneous reduction in the proportion of small bulldozers. The scraper production structure is being improved. We plan to increase the average loader capacity to 5.7 tons, as against 2.2 tons in 1980.

The five-year plan includes utilizing powerful, economical new equipment to produce dry cement and machinery for urban municipal services. Elevator production will increase by 35 percent and models will be updated.

The branch possesses every opportunity for resolving the growing tasks of improving production efficiency, accelerating scientific-technical progress and creating and mastering new machines and machinery. The Ministry of Construction, Road and Municipal Machine Building includes seven scientific-production associations, 27 scientific research, planning-design and technological organizations and 14 pilot and pilot-experimental enterprises. More than 12,000 people work in them, including a significant number of doctors and candidates of technical sciences. Upwards of 23 thousand designers and technologists work at the plants. This is a large creative force. It is important to direct it towards reducing the time involved in developing new types of machines and machinery and towards improving their quality and economy of operation.

Domestic construction, road and municipal machine building relies in its development on fruitful, mutually advantageous cooperation among CEMA member-nations. The advantages of socialist economic integration are convincingly revealed by practice. Thus, the Ministry of Construction, Road and Municipal Machine Building is working under 22 multilateral and bilateral agreements on production specialization and cooperation. International scientific-production associations and joint design bureaus have been created and are operating successfully. These include the "Elektro-instrument" Soviet-Bulgarian scientific-production association, a Soviet-Polish design bureau for self-propelled 25- to 100-ton hydraulic cranes and other organizations. Production of the latest high-pressure painting units is increasing in coordination with enterprises of the Hungarian People's Republic.

The branch draft five-year plan was drawn up with consideration of the best use of available production reserves, introducing new equipment and progressive technology, saving metal and other material resources and improving labor organization on the basis of developing the brigade method. In 1981-1985, we plan to obtain 93 percent of the increment in production volume through increased labor productivity.

The number of mechanized, automated and semiautomated flow lines and the fleet of preset numerical control machine tools are to be increased. Carrying out the re-tooling program will ensure a savings of the labor of more than 40,000 workers.

We anticipate lowering the rolled ferrous metals norm by 20 percent during the five-year plan. According to this assignment, technological processes will be improved. Top-priority attention is being paid to procurement production, where economy reserves are especially great. We are faced with increasing the manufacture of castings on automatic lines nearly 2.5-fold as compared with this past five-year plan. The sphere of application of progressive welding processes is to be expanded by 20 percent. At least 15 part-rolling mills will be established and put into operation and a broad products list of items will be changed over to low-waste technology.



Currently, 27.7 percent of all items being produced in the branch have been certified in the highest quality category, as against 7.6 percent in 1975 and an anticipated 40 percent in 1985. Although their share of total production volume increased significantly this past five-year plan, the Ministry of Construction, Road and Municipal Machine Building is still below a number of other branches of machine building in terms of this indicator. The assignment to bring the proportion of output with the Badge of Quality up to 40 percent in 1985 should therefore be considered a minimum assignment. Twenty-three plants are still not producing a single type of output in the highest quality category.

During the first eight months of this year, the Ministry of Construction, Road and Municipal Machine Building met the plan for production volume, producing 18 million rubles worth of output above the assignment.

Among the leading enterprises which have achieved good results in carrying out the state plan and meeting counter plans and socialist obligations are the collectives of Slavyanskiy Construction Machinery Plant, Gotval'dovskiy Machine Building Plant, "Krasnyy Oktyabr'" machine building plant in Khar'kov, Odessa Heavy Crane-Building Association and a number of others. At the same time, 48 enterprises have not coped with the assignment in terms of output marketed. The branch as a whole underfulfilled the established plans for excavators and excavator spare parts, tower cranes, automatic graders, machinery for urban municipal services and certain other types of equipment.

The ministry collegium and the leaders of all-union industrial associations and enterprises are obligated to transmit the experience of the leading collectives which, while working under the same conditions, have emerged as leaders in the competition for successful fulfillment of the 1981 plan and the entire five-year plan.

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## CONSTRUCTION MACHINERY

### IMPROVEMENTS URGED IN CONSTRUCTION MACHINERY, MOTOR TRANSPORT USE

Moscow BYULLETEN' STROITEL'NOY TEKHNIKI in Russian No 11, Nov 81 (signed to press 13 Nov 81) p 5

[Article: "Improving Construction Machinery and Motor Transport Use in the USSR Ministry of Construction of Heavy Industry Enterprises"]

[Text] The USSR Gosstroy collegium, having reviewed at a 27 August 1981 meeting the question of steps taken by the USSR Ministry of Construction of Heavy Industry Enterprises to improve the use of construction machinery and motor transport, noted that construction organizations of the USSR Ministry of Construction of Heavy Industry Enterprises, having a significant fleet of machinery and trucks available to them, are doing a certain amount of work to develop work mechanization and reduce expenditures of manual labor. In the 10th Five-Year Plan, the amount of earthmoving work done by hand per million rubles of construction-installation work decreased by 16.5 percent, by 24.9 percent for plastering and by 16.9 percent for painting. The USSR Ministry of Construction of Heavy Industry Enterprises is working to manufacture machinery and equipment not being supplied by industry. Thus, ministry enterprises have mastered the release of automatic concrete pumps, automatic concrete mixers, specialized means of motor transport and a number of other machines.

At the same time, the ministry has not paid the necessary attention to questions of improving construction equipment use. Machinery up-time not only did not increase in the 10th Five-Year Plan, but even decreased. The number of hours of work per day per single-scoop excavator was 12 hours in 1980, as against 12.1 hours in 1975, for bulldozers -- 11.9 and 12 hours, caterpillar-track cranes -- 14.9 and 15.5 hours, and tower cranes -- 12.8 and 13.4 hours, respectively. The established assignments for output were not met in 1980 for any machines except bulldozers. Slurry preparation automation assignments were not met. There are significant shortcomings in organizing machinery repair and servicing. The 1980 centralized machinery repair assignments were not met. The ministry has not finished concentrating machines and means of small-scale mechanization at specialized trusts and administrations.

There are substantial shortcomings in truck use. The level of truck operation organization remains low. In 1980, productivity per average-listed vehicle ton was 13.8 percent less than in 1976, the truck fleet use coefficient dropped from 0.620 to 0.590, and average vehicle operation per 24-hour period dropped from 10.9 to 10.6 hours. The truck fleet is provided with insufficient trailers, and the number of trailers decreased during the 10th Five-Year Plan. The USSR Ministry of Construction of Heavy Industry Enterprises failed to meet the 1980 comprehensive mechanization

plan assignments for growth in shipment volume using truck trailers, for freight shipments in containers and packets, for shipments of brick and other small wall materials in packets and on pallets.

The USSR Ministry of Construction of Heavy Industry Enterprises has not taken adequate steps to provide the vehicle fleet with a production base for technical service and maintenance on rolling stock. Capital investments for building transport facilities are being utilized unsatisfactorily.

The USSR Gosstroy collegium has obligated the USSR Ministry of Construction of Heavy Industry Enterprises to review measures in the 1981-1985 plan for ensuring a continued reduction in expenditures of manual labor and improving the use of construction equipment, with a view towards:

- decreasing specific work volume done manually by 20-25 percent in 1985 as against 1980 and raise the level of concrete mixture and slurry preparation automation to 50 percent in 1985;

- finish concentrating equipment in mechanization trusts and specialized small-scale mechanization administrations in 1982-1983;

- bring the level of availability of operation centers to mechanization administrations up to 80 percent by 1985;

- broadly introduce a comprehensive quality control system at ministry mechanical repair enterprises and set up such a system at at least 10 enterprises;

- work out and approve a 1981-1985 plan for transferring existing concrete-slurry shops, centers and facilities to automated operating conditions;

- organize the training of servicing personnel (electricians, operators) to work in automated concrete-slurry mixing shops, centers and facilities;

- ensure a 10-12 percent increase in truck productivity over the five-year period, especially for large trucks.

The collegium has approved a USSR Ministry of Construction of Heavy Industry Enterprises proposal on creating check and test point technical services in 1982-1983 for adjusting, operating and repairing means of automation used in preparing cement mixtures and slurry and a proposal on reducing by 30 percent the number of small vehicle services by concentrating vehicles in large cost-accounting motor transport enterprises.

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## BUILDING MATERIALS

### ECONOMICS OF SLAG PORTLAND CEMENT PRODUCTION DISCUSSED

Moscow TSEMENT in Russian No 11, Nov 81 (signed to press 28 Oct 81) pp 3-5

[Article by Candidate of Economic Sciences V. S. Karelin, State All-Union Scientific Research Institute of Cement Industry: "Economic Effectiveness of Slag Portland Cement Production and Use"]

[Text] State Standard 23464-79 "Cement. Classification" recommends using, in addition to clinker Portland cement and Portland cement with mineral additives, slag Portland cement in concrete, prefabricated reinforced concrete and monolithic structures, except in structures alternately subjected to moistening and drying, and in MRZ 200 frost-resistant concretes and heavy concretes hardening at +10°C without heating.

The NIIZhB [Scientific Research Institute of Concrete and Reinforced Concrete] feels it suitable to increase the proportion of slag Portland cement in deliveries to all of the country's economic regions from 28 percent (1981-1985) to 29-30 percent (1986-1990), except in the East Siberian, Northwestern and West Siberian regions, in which the proportion of slag Portland cement must not exceed 19, 22 and 23 percent respectively.

However, in recent years the absolute volume of slag Portland cement being produced has consistently decreased, and it is set at 31.2 million tons in the 1981 plan, which is 4.2 million tons less than in 1977, when its highest production level was attained.

From the national economy's point of view this status of slag Portland cement production is uneconomical, requiring significant overconsumption of fuel and power resources.

Production of slag Portland cement is concentrated for the moment mainly at plants in the Ukraine, the Urals, the country's center, West Siberia and the Donets and Dniepr regions, which produce more than 60 percent of the total volume. These regions are also typified by a high proportion of its consumption in relation to the total volume of cement used (up to 45-50 percent).

At the same time in view of their remoteness from the slag production centers and the low volume of multi-ingredient cement produced, certain economic regions of the country (Volga-Vyatka, North Caucasus, Baltic and some others) consume little cement of this sort--from 2 to 10 percent.

It is mainly in regard to these regions that it may be deemed suitable to develop production of such cement, and correspondingly deliver granulated slag and other active additives to these regions.

Today the grade of slag Portland cement is an average of 8.0 MPa lower in the sector than the grade of Portland cement.

The economic effectiveness of producing slag Portland cement is known to stem from the fact that a certain fraction of the clinker used to produce it is substituted by cheaper granulated blast furnace slag. On a sector average, 1 ton of dry granulated slag has cost the plants almost three times less than a ton of clinker.

The difference between the amount paid by different plants for clinker and slag varies within even broader limits due to both the cost of the clinker and the cost of the slag. Outlays on dry granulated blast furnace slag depend significantly on the distance it must be shipped to the cement plants (Table 1).

Table 1

Plant Groups	Proportion of Total Slag Con- sumption by Groups of Enter- prises, %	Average Shipping Distance (1980), km	Cost Per Ton		Cost Difference Between Clinker and Slag, Rubles/Ton
			Clinker	Dry Slag	
Plants using local slag	33.8	-	113.66	2.25	11.41
Plants using im- ported slag	66.2	569	9.68	4.29	5.39
To include with a shipping dis- tance of, km:					
Up to 300	16.2	139	9.12	3.34	5.78
301-500	18.1	403	10.78	4.30	6.48
501-700	14.2	565	10.83	4.92	5.91
701-1,000	7.3	897	8.31	4.42	3.89
1,000-1,500	7.8	1,126	9.44	5.39	4.05
Over 1,500	2.6	1,838	8.90	6.28	2.62
Averages	100.0	376	10.10	3.43	6.67

While the difference in prices between two neighboring grades of Portland cement averages 3 rubles, given a difference of 8.0 MPa for the average grade of Portland cement and slag Portland cement, the difference in price between Portland cement and slag Portland cement is 2.40 rubles, and if we consider the exchangeability factor of slag Portland cement in relation to Portland cement, which is equal to 0.95 (derived by the NIIZhB), this difference is 2.5 rubles.



Hence it is clear that if we correct for equal quantities of binders, the cost difference between clinker and slag would be close to zero only if slag is delivered distances over 1,500 km.

Naturally, however, it would be incorrect to consider only the average economically suitable radius of slag shipments to cement enterprises. Shipping distances should be determined individually for each enterprise depending on the concrete outlays on clinker and slag with a consideration for the quality of the cement produced with these materials.

The cost of slag Portland cement and the amount its cost is lower relative to that of Portland cement are highly variable among individual plants. At most enterprises the outlays per ton of slag Portland cement are lower than the cost of Portland cement, both in actual terms and when expressed in terms of an ideal grade. However, some plants that produce the cheapest clinker or that import slag from faraway enterprises may find slag Portland cement to be more expensive than Portland cement containing mineral additives.

We can see from Table 2 that for most cement enterprises importing slag from distant points, production of slag Portland cement is economical (when expressed in terms of grade 400 Portland cement). The Sebyakovskiy, Krasnoyarsk, Chernorechensk and Ust'-Kamenogorsk plants and the "Novorostsement" Combine are exceptions.

Table 2

(1) Предприятия	(2) Средняя дальность перевозок шлаков	(3) Объем перевозок шлаков, тыс. т	(4) Средняя марка		Себестоимость 1 т. руб. (7)				Разница между себестоимостью цемента и ПЦД, руб. т	
			(5) пцд	(6) шпц	(8) в натуре		(9) пересчет на марку 400		(8) в натуре	(9) пересчет на марку 400
					пцд	шпц	пцд	шпц		
(11) Дальность перевозок 300—1000 км										
Себряковский завод (12)	969	567.1	400	300	10.15	8.07	10.15	10.37	1.48	-0.22
Комбинат «Новороссемент» (13)	800	230.4	498	300	12.22	11.30	10.84	13.51	0.92	-2.21
Заводуновский комбинат (14)	904	165.6	445	391	11.98	10.52	11.25	11.20	1.45	0.05
Камеце-Подольский завод (15)	820	375.5	400	400	16.32	14.92	16.32	15.70	1.40	0.62
Красноярский завод (16)	952	170.8	459	300	14.12	12.30	12.95	14.78	1.76	-1.83
(11) Дальность перевозок 1001—1500 км										
Чечено-Итгушский (17)	1154	112.1	431	400	25.79	19.30	24.05	29.31	6.49	4.34
Жигулевский комбинат (18)	1354	335.1	400	382	12.35	11.43	12.35	12.27	0.95	0.08
Ульяновский завод (19)	1116	333.5	400	400	12.07	11.20	12.07	11.79	0.87	0.28
Чернореченский завод (20)	1035	557.8	400	368	14.20	13.55	14.20	14.95	0.55	-0.75
Сарептинский завод (21)	1036	271.5	400	318	12.09	10.07	12.09	11.78	2.02	0.33
(11) Дальность перевозок свыше 1500 км										
Семипалатинский завод (22)	1640	259.6	400	400	14.36	13.65	14.06	13.31	2.31	1.65
Усть-Каменигорский завод (23)	2029	271.5	423	400	14.40	13.74	13.97	14.46	0.71	-0.49

Key:

- |   |                                |
|---|--------------------------------|
| 1. Enterprise                             | 8. Actual                      |
| 2. Average slag shipment distance         | 9. In terms of grade 400       |
| 3. Slag shipment volume, 1,000 tons       | 10. Difference between cost of |
| 4. Average grade                          | ПЦД and ШПЦ, rubles/ton        |
| 5. Portland cement with mineral additives | Shipment distance              |
| 6. Slag Portland cement                   | 12. Sebyakovskiy Plant         |
| 7. Cost, 1,000 rubles                     | 13. "Novorostsement" Combine   |

[Key continued on following page]

- |                             |                            |
|-----------------------------|----------------------------|
| 14. Zdolbunov Combine       | 19. Ul'yanovsk Plant       |
| 15. Kamenets-Podol'sk Plant | 20. Chernorechensk Plant   |
| 16. Krasnoyarsk Plant       | 21. Sterlitamak Plant      |
| 17. Checheno-Ingush         | 22. Semipalatinsk Plant    |
| 18. Zhigulevsk Combine      | 23. Ust'-Kamenogorsk Plant |

In a number of cases replacement of slag imported from distant points by local industrial wastes is found to be economically effective, even though they may be inferior in quality to slag.

Dry ash from thermal electric power plants is the most economical in cement production. Dry ash removal units have been built or are being erected in the Ukraine (Burshtynskaya, Zmiyevskaya, Ladizhinskaya and Kurakhovskaya GRES), in Vorkuta, Krasnoyarsk, Slantsy, Ryazan', Frunze and Siberia (Krasnoyarskaya TETs-1 and TETs-2, Yayvinskaya GRES-16), which will make it possible to considerably reduce additive shipment distance to the plants in Kaments-Podol'sk, Ol'shansk, Vorkuta, Krasnoyarsk, Gornozavodsk and Slantsy, the combines in Amvrosiyevka, Balakleya and Kant, and the "Mikhaylovtsement" Production Association. Calculations made by the NIItsement [State All-Union Scientific Research Institute of Cement Industry] showed that this would produce a sizeable economic impact for many cement plants. Moreover use of dry ash in place of slag at a number of plants (in Vorkuta, Kant and elsewhere, will make it possible to organize production of slag Portland cement.

A high economic impact can also be achieved by organizing deliveries of ash and slag from the Syzranskaya TETs to the Zhigulevsk Combine, and deliveries of fuel slag from the Gusinozerskaya GRES to the Timlyuyskiy Cement Plant.

Extensive use of electrothermal phosphorus slag will be highly effective at a number of plants of Central Asia.

Given the significant amount of energy consumed by cement production, fuel and electric power economy is one of the most important indicators defining the effectiveness of introducing additives into cement.

Comparative indicators for consumption of fuel and electric power in 1980 to produce Portland cement with mineral additives and grade 400 slag Portland cement at different plants are shown in Table 3, from which we can see that consumption of comparison fuel to produce grade 400 slag Portland cement is 45-90 kg/ton lower and electric power consumption is 6-23 kw·hr/ton lower than for production of the same grade of Portland cement with mineral additives--or correspondingly an average of 36.4 and 12.1 percent lower.

In this case the outlays on equipment maintenance and operation decrease by 10-15 percent and consumption of lining materials decreases by 20-30 percent.

Thus the energy consumed to produce slag Portland cement is an average of 25 percent less than energy consumed to produce Portland cement with mineral additives.

Unit capital investments to produce 1 ton of Portland cement at a plant using the wet production method and possessing four production lines with 5x185 meter furnaces average about 43.0 rubles, while capital investments at a plant using the dry production lines with 7.0/6.4x96 meter furnaces are 45.4 rubles.

Table 3

(1) Предприятия	(2) Вид цемента	(3) Количество до- бавок, %	(4) Расход условно- го топлива, кг/т цемента	(5) Экономия топлива на 1 т ШПЦ		(7) Расход электро- энергии, кВт·ч/т цемента	(8) Экономия электро- энергии на 1 т ШПЦ	
				(6) кг	%		(9) кВт·ч	%
(12) Старооскольский завод	{10} пцд {11} шпц	16,1 33,2	201,6 140,0	— 61,6	— 30,5	70,4 57,8	— 12,6	— 17,9
(13) ПО «Михайловцемент»	пцд шпц	16,3 40,0	179,0 145,0	— 34,0	— 19,0	105,2 92,0	— 13,6	— 12,5
(14) ПО «Глинозем»	пцд шпц	9,3 30,0	187,1 94,2	— 92,9	— 49,6	88,2 66,9	— 21,3	— 24,1
(15) Жигулевский комбинат	пцд шпц	17,3 44,7	187,1 120,3	— 66,8	— 35,7	79,5 56,3	— 23,2	— 29,2
(16) Здолбунровский комбинат	пцд шпц	8,0 49,5	193,1 116,7	— 76,4	— 39,6	57,8 55,8	— 2,0	— 2,9
(17) Каме́нец-Подольский завод	пцд шпц	15,7 33,7	155,0 145,0	— 45,0	— 23,7	91,5 84,9	— 6,6	— 7,2
(18) Чимкентский завод	пцд шпц	20,0 49,2	174,5 120,6	— 53,9	— 30,9	77,1 70,2	— 6,9	— 8,9
(19) Балакле́йский комбинат	пцд шпц	14,8 37,1	189,6 114,6	— 74,0	— 39,2	78,1 63,3	— 14,8	— 18,9

## Key:

- |   |   |
|---|---|
| 1. Enterprise   | 10. Portland cement with mineral additives    |
| 2. Type of cement                                     | 11. Slag Portland cement                      |
| 3. Quantity of additives, %                           | 12. Starooskol'skiy Plant                     |
| 4. Comparison fuel consumption,<br>kg/ton of cement   | 13. "Mikhaylovtsement" Production Association |
| 5. Fuel economy per ton of ШПЦ                        | 14. "Glinozem" Production Association         |
| 6. Kg   | 15. Zhigulevsk Combine                        |
| 7. Electric power consumption,<br>kw·hr/ton of cement | 16. Zdolbunov Combine                         |
| 8. Electric power economy per ton<br>of ШПЦ           | 17. Kamenets-Podol'sk Plant                   |
| 9.. Kw·hr   | 18. Chimkent Plant                            |
|   | 19. Balakleya Combine                         |

Capital investments to build plants producing slag Portland cement (containing an average of 50 percent slag) of about the same output capacity (2.4 million tons by the wet method and 2.3 million tons by the dry method) break down as follows:

Outlays on quarry maintenance and raw materials handling decrease by 30-35 percent, and outlays on the clinker roasting operation decrease by 40 percent;

outlays on grinding, packing and silo storage remain at the previous level;

Table 4

<u>Economic Indicators</u>	<u>Grade 400 Portland Cement With Mineral Additives</u>	<u>Grade 349 Slag Portland Cement</u>	<u>Indicators for Slag Portland Cement in Relation to Portland Cement With Mineral Additives, %</u>
Effectiveness factor	1.03	0.89	-
Cost of 1 ton of cement with regard for quality <i>C</i> (grade 400), rubles-kopecs	15-10	14-26	92.6
Unit capital investments per ton of cement, rubles-kopecs	45-40	34-70	76.4
Unit capital investments with regard to quality <i>K</i> , rubles-kopecs	44-44	38-90	88.5
Corrected outlays, <i>C+EgK</i> , rubles-kopecs	20-68	18-93	91.5

Note: *Eg*--standard effectiveness factor, equal to 0.15.

outlays on additive handling (drying, storage, grinding) increase by three to four times;

outlays on transportation and auxiliary shops decrease by 28 percent.

As a result the cost of a cement plant producing slag Portland cement is 78.0-76.5 percent of the cost of a cement plant producing Portland cement with mineral additives--that is, unit capital investments per ton of slag Portland cement are 34.0-34.7 rubles, while unit capital investments corrected in relation to comparable qualitative indicators are 39.1-39.3 rubles.

The results of the calculations are summarized in Table 4, which shows the effectiveness of producing slag Portland cement in comparison with Portland cement with mineral additives.

According to data of the USSR Ministry of Ferrous Metallurgy and the USSR Ministry of Chemical Industry, in the long-term future the country's additional granulated slag resources will total 4.9 million tons, and they will appear in the following economic regions: Northwestern (Cherepovets Metallurgical Plant)--660,000 tons;

Central Chernozem ("Svobodnyy Sokol" Plant)--180,000 tons; West Siberian (Kuznetsk and Zapadno-Sibirsk metallurgical plants)--783,000 tons; Ural (Nizhniy Tagil Metallurgical Plant)--335,000 tons; Donetsk-Dniepr (the metallurgical plants in Krivoy Rog--435,000 tons, Yenakiyevo--230,000 tons, Makeyevka--270,000 tons; Plant imeni F. E. Dzerzhinskiy--542,000 tons)--1,513,000 tons, Kazakh SSR (Karaganda Metallurgical Plant--333,000 tons, Chimkent Metallurgical and Novodzhambul'sk Phosphorus plants--1.1 million tons)--1,417,000 tons.

Cement plants are receiving about 80 percent of all available granulated slag resources. Consequently the additional resources of granulated slag available for cement production are 3.9-4.0 million tons, which would permit production of almost 8.0-8.5 million tons more of slag Portland cement (assuming a slag concentration of 50 percent in cement); this would mean increasing production to about 40 million tons in 1985. This would be 28.6 percent of the total volume of cement produced in the country.

In addition to expanding production of slag Portland cement at plants that have been doing so for a long time already, the NIItsement feels it suitable to organize production of this binder at the Slantsy, Navoi and Rezina plants, at the Angarsk, Brotseny and Kantsk combines and at the "Akmyantsementas" and Bryansktssement" production associations.

Calculations show that the slag shipping distances would increase insignificantly, and if we consider that shipping distance associated with the marketing of slag Portland cement would decrease, the country's total freight turnover will not increase.

Thus by increasing production of slag Portland cement by 8.0-8.5 million tons as of 1985, we will achieve an economic impact totaling 14-15 million rubles in corrected outlays, reduce the volume of capital investments by 40-45 million rubles and save 400,000-450,000 tons of comparison fuel and 84-85 million kilowatt-hours of electric power.

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## BUILDING MATERIALS

### RESULTS OF FUEL-POWER ECONOMIZATION SUMMARIZED

Moscow TSEMENT in Russian No 11, Nov 81 (signed to press 28 Oct 81) p 5

[Text] The USSR Ministry of Construction Materials Industry has summarized the results of the sector competition for economization of fuel and power in 1980.

Money prizes have been awarded to the following collectives for achieving the best indicators in raising the effectiveness with which fuel, thermal energy and electric power are used in cement industry:

Bezmein Cement Plant (Glavzapadtsement); Korkina Cement Plant (Glavvostoktsement); Akmyane "Akmyantsementas" Order of the Red Labor Banner Cement-Shale Production Association imeni 50-Letiye SSSR (Lithuanian SSR Ministry of Construction Materials Industry).

Mention was also made of the good work done to economize on fuel, thermal energy and electric power by the following collectives:

The Lipetsk, Vorkuta, Podgorenskiy and Sebryakovskiy plants (Glavzapadtsement); Teploozersk, Nev'yansk, Topkinskiy and Krasnoyarsk plants, "Spassktsement" Production Association and the Zhigulevsk Order of Lenin Construction Materials Combine (Glavvostoktsement); "Volkovysktsementnoshifer" Production Association (Belorussian SSR Ministry of Construction Materials Industry); Sas-Tyubinsk Plant (Kazakh SSR Ministry of Construction Materials Industry); Kant Cement-Shale Combine imeni 50-Letiye Kirgizskoy SSR (Kirghiz SSR Ministry of Construction Materials Industry).

Among the sector's institutes, the collective of the State All-Union Scientific Research Institute of Cement Industry was noted for the good work done to economize on fuel and energy resources.

Economization of fuel and energy is deemed to be one of the most important problems of all industrial sectors in L. I. Brezhnev's report to the 26th CPSU Congress and in the "Basic Directions of the USSR's Economic and Social Development in 1981-1985 and in the Period to 1990." Therefore study of the experience of the leading enterprises in economical use of fuel and electric power is the priority task of all cement plant collectives and executives.

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